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This study explored student perceptions of the North Carolina State University Libraries Learning Commons. This investigation involved two approaches. A survey, offered both online and print, was used to gather input directly from students. This survey was supplemented by a qualitative data analysis of posts to the Learning Commons discussion board, which had been used as an outlet for communication between students and library staff. The results of these analyses were used to identify the strengths of the Learning Commons, as well as areas in which services or resources might be improved. Students indicated that they valued the relaxed atmosphere of the Learning Commons, the computing facilities offered, and the physical space available for work or study. The popularity of the Learning Commons, however, was perceived to have a negative impact on the level of noise in the space and the availability of both computers and seating.

Headings:

Learning commons

Surveys -- College and university libraries

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North Carolina State University -- Libraries

A USER-CENTERED EVALUATION OF THE NORTH CAROLINA STATE UNIVERSITY LIBRARIES LEARNING COMMONS

by
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of the School of Information and Library Science
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Approved by

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INTRODUCTION

The advent of the World Wide Web as an information medium sparked a crisis in academic libraries during the 1990s. There was a small revolution in the ways that academic libraries functioned on a day-to-day basis. That decade saw the widespread adoption of the online catalog, the proliferation of electronic databases, and the initial stages of digitization. This technological change created competition for libraries in the form of Internet search engines and online forums. College and university libraries experienced a decline in usage as students conducted their research from dorm rooms and coffee shops rather than in study carrels in the stacks. This problem caused libraries to reexamine their services and the needs of their user populations in an effort to reposition themselves at the center of learning in academic institutions.

What they discovered was that students were no longer satisfied with the traditional models of library service. The generation that entered college at the beginning of the 21st century demanded more interactive media, better tools to evaluate information, more integrated services, and a social context for learning. One outcome of this assessment was the development of new models for reference service, including expanded hours, consolidation of services, roaming librarians, research consultations, and the involvement of users in planning and design (Spencer, 2006). Another result of this period of evaluation was the 'library as place' movement. Librarians worked to create comfortable, more informal study areas that would appear more inviting to students. These ideas merged to form another solution to the evolving needs of students in the form

of the Information Commons – a collaborative workspace providing a combination of service points and technologies in support of student learning.

The concept of the Information Commons was popularized by Donald Beagle, then a librarian at the University of North Carolina at Charlotte. Beagle foresaw a new type of library facility encompassing a central service point, the availability of areas for both individual and collaborative study, and the incorporation of other campus support units to assist students (Beagle, 1999). Other aspects of the model that have emerged since then include the presence of research and computing assistance, the availability of multimedia and production software on computers, and a hybrid staffing model including a mixture of librarians, information technology specialists, and public services assistants (Spencer, 2006). While the specific characteristics of Information Commons at different libraries may vary, especially in name, these remain the guiding principles in implementing any such library space.

Since its inception, the Information Commons concept has been implemented in many academic libraries throughout the United States and Canada. The result has been a resurgence in the use of physical facilities and the rebirth of the library as the center of academic learning. Libraries have used a number of traditional statistical methods to measure the effects of the Information Commons on the use of their resources. The most common result of implementation has been a marked increase in gate counts and thereby the number of students visiting the library (Malenfant, 2006; Albanese, 2004). Other effects observed include a rising number of information and reference questions, greater demand for multimedia programs, and the need for expanded staff competencies (Halbert, 1999). Each of these outcomes has been used to gauge the relative success of

the Information Commons model in academic libraries. These quantitative measures are often the easiest methods of evaluation, and accordingly have been among the initial steps toward assessment in libraries implementing the model. Together, they testify to the new position of the library on campus and the greater visibility of its services and facilities in the eyes of the students.

The wealth of quantitative data concerning the effects of the implementation of the Information Commons exists in stark contrast with the paucity of studies that have been conducted demonstrating an analysis of qualitative user data. Few libraries that have implemented Information Commons have gone so far as to conduct formal assessments of the projects, with both quantitative and qualitative measures. There are even fewer published accounts of such studies. Those that have conducted some sort of assessment have usually investigated separate aspects of the model without addressing the Information Commons as a whole. For instance, Bailey and Tierney (2002) described several instruments that were used at UNC-Charlotte, including a survey of staff members working in the Information Commons, a survey of library patrons, and evaluations completed as part of library instruction classes. MacWhinnie (2003) points to several issues that may explain the lack of comprehensive assessment. These include the inability to evaluate the multiple features that are inherent in the model and the lack of a reliable method for measuring the effectiveness of these aspects as a coherent entity.

There is indeed a critical need for more qualitative data in the assessment of Information Commons. The statistical counts need to be balanced with student perspectives. It is important not to consider an increase in gate counts or greater demand for service as the sole indicators of success. To do so may risk alienating those users who

are drawn to the Information Commons for its innovative nature. In his conceptualization of the Information Commons, Beagle (1999) states that "change is always the operative word, for successful implementation of an Information Commons involves functional integration of technology and service delivery to realign the library with the rapidly evolving digital environment" (p.83). This need for evolving services does not dissipate when the space first opens to students, but rather persists so long as the Information Commons is present. Regular assessment of user perceptions is necessary in order to update planned initiatives and prepare the library to meet the ever-changing needs of college students.

The NCSU Libraries Learning Commons

Within the past decade, the North Carolina State University (NCSU) Libraries have gained a reputation for innovation and service to students. The opening of the NCSU Libraries Learning Commons in March 2007 was a continuation of this trend. The new space encompassed 14,500 square feet of open space inside D.H. Hill Library, the main library on campus, with more than 100 PC and Mac computer workstations and multiple seating areas (see Appendix A). Reference services and technological support were combined at a single desk located just inside the entrance to assist students in their work. Whiteboards spread throughout the space and three enclosed rooms with LCD screens were included to facilitate group study. Multimedia workstations were provided for scanning and graphics editing and specially-designated GIS machines allow students to create customized data maps. One of the more distinct aspects of the NCSU Learning Commons has been the presence of several gaming consoles intended to provide study breaks for students. Other features included a computer availability map, contemporary

but comfortable furniture, and eBoards advertising university and library events and services.

Assessment has been part of the NCSU Libraries Learning Commons from its very inception. Library staff collected a number of usage statistics both before and after implementation of the new space, including gate counts, the number of reference transactions, and laptop checkouts. The need for qualitative feedback was also addressed, however, as one of the main goals of the Learning Commons implementation was the creation of a library space that could be informed by student opinion. The focus on the Learning Commons as a student-centered space reflects Beagle's conceptualization of the Commons model. The NCSU library staff adhered to this vision in a number of ways. In designing the Commons, a number of student advisory groups and focus groups were consulted in order to get an idea of what students wanted in the space. After the Learning Commons opened, plans for further focus groups, surveys, and a discussion board for student feedback were established. The Learning Commons discussion board, in fact, has been available since the opening of the facility and has produced a good number of student comments. This forum created a unique opportunity for students and library staff to interact and work to develop services in the Learning Commons. The focus on assessment and student-centered design at NCSU created an environment that was receptive to the need for qualitative input and which provided an ideal climate for this study.

Purpose of this Study

This study was meant to have both practical and theoretical implications for Information Commons facilities. First, this study was designed as an important part of

the assessment process for the NCSU Libraries Learning Commons. The primary research question of this study was, therefore:

What are students' perceptions of the NCSU Libraries Learning Commons?

This question guided the development of the study methodology and the instruments used to assess the facility. The findings from this research will help to inform future decisions on services and the use of space in the Learning Commons. Student input is viewed as a necessary part of this process, especially as it relates to the Information Commons concept and its evolutionary nature. The results of this study may also serve to inform the design of Information Commons-type spaces in academic libraries more generally, though this will not be a major purpose of this research.

This study was also conducted in order to provide a further example of qualitative analysis for academic librarians at other institutions. Quantitative, rather than qualitative, methods have dominated the assessment processes of Information Commons facilities to date This research was meant to help fill the gap in qualitative assessment methods and to explore the development of this model for future work. Later studies may investigate this method and other models for their effectiveness and develop a uniform mode of assessment for Information Commons.

LITERATURE REVIEW

Since the mid-1990s, the Information Commons model has experienced widespread adoption in academic libraries. The concept emerged from the evolution of library services occurring during that period and the growing effect it had on the information-seeking behaviors of students. The origins and evolution of the Information Commons model have been well documented in the library and information science literature. Numerous articles have discussed the meaning of the concept, its implications for academic libraries, and future directions of the model. The literature also provides ample evidence of current practices concerning Information Commons facilities and services through the many published case studies. There is a substantial gap, however, in the coverage of assessment of Information Commons in libraries. While there are a number of documented quantitative methods of analysis, there are very few providing examples of qualitative studies. One objective of this study, therefore, was to address this gap in the literature by conducting a qualitative study of the Learning Commons at North Carolina State University.

When Carlson (2001) published his controversial piece entitled "The Deserted Library" in *The Chronicle of Higher Education*, it brought the issue of the declining use of library facilities to the forefront. Carlson described how spaces such as bookstores and coffee shops were supplanting traditional library spaces as popular study locations for students. The appearance of the article in such a widely-read periodical raised the debate over the need for physical libraries to a new level in academia. As a result, college and university librarians realized that there was a need to redefine the library's role on campus in order to adjust to the changing demands of students. This realization was embodied in

the 'library as place' movement, in which librarians worked to redesign library spaces to accommodate both developing technological needs and the evolving nature of student learning.

The 1990s saw a growing number of renovation and new construction projects in college and university libraries in response to the 'library as place' movement. Shill and Tonner (2003; 2004) conducted a study of physical improvements in academic libraries during the years 1995-2002 and found that more than 390 such projects had taken place within that period. Among the more prevalent features of the new facilities were the inclusion of snack bars or coffee bars, upgrades to computing and network access, and an increase in the amount of student seating available. Usage data collected as part of the study showed an increase in gate counts and circulation for 80% of the responding libraries, with more than a quarter of these reporting an increase of 100% or greater in daily use. Thus, the study served to refute Carlson's concept of the deserted library.

The relationship between the 'library as place' movement and the development of the Information Commons concept has been well established (Beagle, 2002; Spencer, 2006). Shill and Tonner's study identified a number of factors that were associated with an increase in usage, among which were computing and network access, the quality of natural lighting, the quality of user work spaces, and the general layout of facilities. Although the study did not identify specific types of new facilities, all of these variables are associated with the Information Commons model.

Donald Beagle has been widely credited with having developed the Information Commons concept in his work as a public library director in Michigan and later as a librarian at the University of North Carolina at Charlotte. Although some libraries had

experimented with the idea of more advanced computer labs and redesigned spaces, it was his article that truly defined the model for others to follow. His piece (Beagle, 1999) provided the theoretical basis for a new model in library service that would be built around the experience of the user. Beagle envisioned a physical space featuring (1) a general information desk that serves as an initial point of contact, (2) a combination of work areas allowing for both individual and collaborative study, and (3) the integration of other campus units in support of research and learning. Outside of its physical aspects, the Information Commons was also meant to be adaptable to change as determined by the evolving needs of users. The model was designed to be flexible, so as to avoid the same issues of stagnation that led to the initial problem of declining use.

Subsequent models have added to Beagle's definition of the Information Commons. Additional aspects include the presence of research and computing assistance, the availability of multimedia and production software on computers, and a hybrid staffing model including a mixture of librarians, information technology specialists, and public services members (Church, 2005; Cowgill, Beam, & Wess, 2001; Haas & Robertson, 2004). While the specific characteristics of Information Commons at different libraries may vary, the dedication to Beagle's original guiding principles has remained consistent.

Just as the details of service have differed between institutions, so have the actual names for these new facilities. The designation of space as the 'Information Commons' has been in no way uniform, with titles varying anywhere from 'Media Union' (University of Michigan) to 'Information Arcade' (University of Iowa). Despite the alternative labels, these facilities differ little conceptually. One exception is the Learning Commons. At the

conceptual level, the Learning Commons has been defined as a more advanced model of the Information Commons, with the emphasis on the creation of knowledge rather than on the synthesis of information (Schmidt & Kaufman, 2005; Bailey & Tierney, 2008, p.2-4). In practice, however, the two names have been used interchangeably and have become synonymous, much like the concepts of bibliographic instruction and information literacy education in reference work.

As would be expected, the development and implementation of the Information Commons model has resulted in the publication of a number of case studies in the library and information science literature. These tend to focus on the practical aspects of library redesign and usually include detailed descriptions of the new facilities and services in order to serve as examples for others to follow. Lowry (1994) described one of the earliest implementations at the University of Iowa. There, a computer lab was introduced to link classroom instruction with library research in light of the transition to electronic resources. Cowgill, et al. (2001) and Whitchurch & Belliston (2006) both illustrated the issues of training staff for new initiatives and dealing with the increase in patron use associated with Information Commons in academic libraries. Church et al. (2002) gave an account of the many technological aspects associated with the creation of an Information Commons, especially when dealing with the combination of library and IT services. The example the authors provide is that of a pay-for-print system integrated with the library's computer workstations in the new space.

Studies of individual Information Commons projects have been prevalent in LIS trade magazines and professional websites, as well. Duncan (1998) reflected upon the implementation of an Information Commons in a health sciences library and its

implications for the broader scope of college and university libraries. A number of useful resources have sprung up on the World Wide Web, as well. The most comprehensive is David Murray's site (2004) providing a directory of libraries with Information Commons facilities and a bibliography of sources on the topic. Though the site has not been updated since 2004, it remains a valuable, though no longer comprehensive, collection of resources. Murray's site also links to the INFOCOMMONS-L listserv, which is itself another trade source for information on the subject.

Even more case studies have identified the practice of user-centered design in adapting the Information Commons model to local environments. Just as the 'library as place' movement had helped to formulate the Information Commons concept, the renewed emphasis on users and usability affected the way in which academic libraries set out to implement the model. Tramdack (1999), in his reaction to Beagle's initial article, pointed to the need to include user input in development of the model, given the emphasis on student learning.

A number of libraries utilized focus groups or student surveys to assess the strengths and weaknesses of current facilities before deciding to implement the Information Commons concept. Most, however, used these instruments to determine which aspects of the model were most important to their patrons. In planning for the Information Commons at Brigham Young University, the librarians sought the input of faculty and IT staff in addition to students before proceeding with the design (Whitchurch et al., 2006). At North Carolina State University, a combination of user surveys, student focus groups, and anecdotal evidence was used to formulate ideas for the Learning

Commons (Spencer, 2007). These examples illustrate some of the ways in which users' perceptions have been brought into the design of new facilities in academic libraries.

The practice of evidence-based design is paralleled by the need for regular assessment and evaluation. Beagle (1999) alluded to this when he described the ever-changing nature of the Information Commons as he conceived of it. MacWhinnie (2003) pointed to this need also, but added that assessment of such facilities in academic libraries may pose a major issue. The multidimensional nature of the Information Commons model precludes the development of a more complicated instrument for evaluation. In addition, the difficulty of measuring student learning as a result of the existence of these spaces has confounded many librarians. These complexities may explain why no uniform method of Information Commons assessment has emerged.

Librarians have developed several methods of evaluation in order to cope with these problems. The first, requiring the least amount of revision, has been to include the Information Commons in the library's broader evaluation programs. Libraries continue to simply administer their regular assessment programs without incorporating the Information Commons as a separate topic. A recent example of such assessment was the student survey employed at Leavey Library at the University of Southern California (Gardner & Eng, 2005). The librarians there wanted to see how well the Information Commons and other facilities were meeting student needs. They therefore administered a closed-ended survey to undergraduates asking them in what ways they were using the library, how often they visited the building, and how satisfied they were with library services. A second but related method involves assessing separate aspects of the Information Commons independent of each other. For example, Bailey and Tierney

(2002) mentioned three survey instruments in development at UNC-Charlotte – one gauging the experiences of information desk staff, another judging public service aspects, and the last dealing with library instruction. This method, however, de-emphasizes the integration of services that is so essential to the Information Commons model.

A third method of evaluation has been even more evident in the literature. Many libraries have turned to readily-accessible quantitative data such as gate counts and circulation statistics in an attempt to solve the problem of assessment. Increased usage of library facilities has been the most widely-cited effect associated with implementation in both refereed journals (Halbert, 1999) and trade magazines (Albanese, 2004). Other sources of quantitative data include closed-ended surveys, attendance at library events or workshops, and the number of reference or directional questions asked. Malenfant (2006) provided one example of a user survey conducted to assess an Information Commons. The survey, distributed to the students at Westminster College, asked respondents to rank services on a scale, with 'Excellent' being the highest value. While limited in scope, these quantitative methods have provided useful measurements for libraries in evaluating facilities and services.

There have been a few published articles describing instances where quantitative data has been utilized as a basis for redesigning or revising Information Commons services. The most prominent so far was a piece describing the results of having an integrated service point in the Commons at the University of Arizona (Bracke, Brewer, & Huff-Eibl, 2007). Bracke and her partners conducted the study to address the problem of staffing the information desk in the Information Commons at the University of Arizona. The desk was then staffed by a combination of librarians, paraprofessionals, and student

assistants. The researchers found that these individuals felt disconnected from the everyday functions of the Commons due to the relatively short duration of desk hours. The authors then took multifaceted approach to assessment, using both a log of transactions at the information desk and a user satisfaction survey. They were hoping to answer two questions: (1) how had the Information Commons changed the types of questions being asked at the desk and (2) did users feel that their needs were being met. The results of the transaction logs showed a growing diversity of questions, requiring new competencies from those staffing the information desk. The study resulted in a modification of services in which both the number of service points and the demand on professional staff were reduced.

The number of articles exhibiting quantitative methods of assessment lies in stark contrast with the dearth of qualitative examples. At this time, there are very few published qualitative studies of an Information Commons in the LIS literature. Those articles that do mention the use of focus groups or open-ended surveys do so without a discussion of methods or results. Schmidt and Kaufman (2005), for example, discuss the positive impact of the Learning Commons as judged by focus groups, comments, and consultations. They do not describe these instruments in any more detail, though. Other articles mention the future development of such methods, but there isn't any follow-up in the literature.

There are, however, some accounts describing qualitative studies that have been undertaken by librarians performing Information Commons assessment in the LIS trade journals and magazines. In *Feliciter*, the magazine for the Canadian Library Association, Nikkel (2003) gives a brief outline of a user feedback survey employed at the Dalhousie

University library. In order to assess students' perceptions of the Learning Commons, a web-based survey was presented with a monetary reward offered as an incentive to participate. The survey included a combination of closed- and open-ended questions, with the goal of evaluating current services and identifying future needs. An article appearing in *New Zealand Libraries* described a more purely qualitative study (Garriock, 2004). At that institution, a two-fold approach to determining students' perceptions was used. Two small focus groups were conducted with semi-structured questions to gather initial data. After deciding that this sample was too small to be representative, the librarians conducting the study then created an online questionnaire with twelve questions. Each of the questions was left open-ended so as to gather the widest range of responses. In this way, the librarians were able to gather input that they would not otherwise have anticipated.

The lack of published qualitative assessments supported the assertion that further research in this area was needed to develop such methods and to provide a model for others to follow. Qualitative methods are necessary for a number of reasons. First, the user-centered nature of the Information Commons model requires that patrons be included in assessment – not just in head counts, but with open, unformatted input. Second, the already well-established practice of including users in the design of learning spaces needs to be carried through the entire process of evaluation and revision in order to be consistent. Lastly, qualitative analysis in general provides a greater depth of understanding of users' perceptions. It may be possible to gain more insight from a fewer number of questions, thereby saving time for users having to complete surveys. In addition to providing a practical assessment of the NCSU Learning Commons, a second

goal of this research was to remedy to this gap in the literature by producing a model qualitative study.

METHODOLOGY

This study employed a two-fold method to assess student perceptions of the NCSU Libraries Learning Commons. First, a survey of current NCSU students was used to gather their general perceptions of the Learning Commons. This survey involved collecting some basic quantitative data for statistical purposes, but most of the questionnaire was devoted to the collection of quantitative information from students. These questions were mostly open-ended to allow students to shape their responses in their own terms. After the surveys had been collected, the responses to each question were coded according to their general themes. These themes were then reviewed and consolidated once the initial coding had been completed in order to facilitate analysis and discussion of the results.

The second component of this study involved a qualitative data analysis of postings to the Learning Commons discussion board. This posting site was developed as a tool to enable students to communicate both with each other and with the library staff in addressing their use of the Learning Commons. The discussion board had proven to be a popular outlet for student feedback, and therefore it contained valuable insight into student opinions. The analysis of the discussion board posts followed similar coding procedures to those that were used for the responses to the student survey. A general theme was identified from the content of each post, and, after each individual post had been coded, themes were consolidated or revised to facilitate analysis. An additional modifier was added to describe the nature of each post.

Rationale

The decision to conduct the study in this manner was based on both theoretical and practical reasoning. The expected time constraints and dearth of resources were major factors in deciding to employ a survey rather than focus groups or some other method of data collection. These methods often require large blocks of time to administer as well as physical space and a considerable amount of setup. Surveys, by contrast, may require time to design and analyze, but are generally easier to administer once they have been initated. Another advantage to survey research is that it allows the researcher to study a larger pool of respondents (Babbie, 2008, p.274). While focus groups are time intensive for the researcher and limit the ability to study large samples, the use of a survey allowed for the collection of data from a larger number of students. This was deemed especially appropriate, given the size of the study population, which spans the entire student community at NCSU.

The added component of the analysis of the discussion board posts was meant to address some of the weaknesses of survey research. First, surveys can be subject to the same element of artificiality that affects social experiments (Babbie, 2004, p.275). Respondents may answer differently when asked directly about their opinions, much as a study participant who knows he or she is being observed may alter their behavior to match anticipated expectations. The discussion board posts were unsolicited comments, and therefore may better represent the true feelings of their authors. The discussion board posts also offered a look at student perceptions over time, while the survey only provided insight into their opinions at the time they completed the questionnaire. The innovative medium of the online discussion board also added to its consideration for this

study. This method of providing for feedback is relatively new to academic libraries, but is well suited to the interactive and organic nature of the Information Commons concept.

The decision to include qualitative rather than quantitative data was another important aspect of this study. One of the purposes of the study was to help close the gap in the literature discussing qualitative evaluation of Information Commons facilities in academic libraries. Therefore, it was important to use methods that were well-suited to the collection of this type of data. Rather than design the survey with closed options for responses, open-ended questions were employed in the survey to gather as broad a perspective as possible from the respondents. This was done in order to collect data that was highly representative of students' true perceptions. This element was crucial to the study, since the Learning Commons is meant to be both user-centered and user-directed. The qualitative analysis of the discussion board posts mirrored these qualities, since user posts were self-initiated. For both components of the study, the value of the results were expected to offset the disadvantages of the added time spent coding responses.

Data Collection – Student Survey

A brief, six question survey was developed to gather qualitative information about the perceptions of the Learning Commons from current students. Print as well as online versions of the survey were created both to ensure a sufficient rate of return and to include at least some non-library users in the assessment. The survey was made available to students during a two week period in March, when library use was traditionally high. Participants for the survey were recruited in a number of ways. Print copies of the survey were placed on the many tables and desks throughout the Learning Commons at the beginning of the survey period. Several large plastic bowls were also placed around the

Learning Commons and were designated as collection points for the surveys. Reference staff gathered the completed surveys from these bowls at least once a day during the two week period. More blank copies of the survey were distributed throughout the Learning Commons as necessary until the survey period had ended.

The online version of the survey used the same questions, but was displayed with different formatting due to the use of a free, web-based data collection service. Advertisements were used to communicate the link for the online survey to potential participants (see Appendix F). These were distributed through several different media, including the student newspaper, a campus events weblog, the Learning Commons discussion board, and printed flyers that were posted to campus bulletin boards near dormitories, classroom buildings, and other gathering places.

While signed consent was not deemed necessary for participants, a fact sheet was provided with both the print and online surveys to inform students of the study's requirements (see Appendixes B & C). For the print version of the survey, the fact sheet was stapled to the front of the questionnaire, and for the online version the fact sheet appeared as the introductory page for the survey site. After the two week period for the survey had ended, all remaining blank copies of the print version were collected from the Learning Commons and recycled and the link to the online version was made inactive.

The questionnaire (see Appendix E) consisted of both closed- and open-ended questions. The former, however, were only used to gather broad demographic information and were not meant to be the main focus of the survey. In order to simplify consent procedures, no personally identifying information was collected as part of the survey. Initial questions asked for the respondent's level of study at NCSU (freshman,

sophomore, junior, senior, graduate, or other), as well as their major or area of concentration. This data was later used in the analysis to seek out trends in the usage of or perceptions of the Learning Commons. A third question then asked students to identify their primary uses of the Learning Commons:

- For what purposes or activities do you use the Learning Commons most often?

This question was followed by a number of suggested responses (individual study, group study, computing, and library research, meeting friends, or taking a break) and also allowed for the respondent to specify other uses under the choice 'Other'. The remaining three questions were open-ended and allowed participants to phrase their own responses:

- What do you like most about the Learning Commons?
- What effect, if any, has the Learning Commons had on your use of the library?
- What aspect(s) of the Learning Commons would you like to see improved?

The last four questions were all linked to or based on an existing mission and assessment plan for the Learning Commons, which included goals for assessing the effectiveness of the facility as it relates to the broader mission of the University Libraries.

Data Collection – Discussion Board Posts

To complement the student surveys, an analysis of posts and comments to the Learning Commons discussion board was also included in the study. These posts originally appeared on the Learning Commons page of the library web site (http://www.lib.ncsu.edu/learningcommons/) and were archived there for future viewing. A time-frame sample was used in collecting posts, including all threads created between March 12, 2007 – the date the Learning Commons opened and the discussion board became active – and January 1, 2008. All posts created during this time frame were

collected for analysis, with two exceptions. First, posts that had been removed by the discussion board administrator due to inappropriate content or other reasons were not examined, as they were no longer publicly viewable. Second, those posts that had been initiated by library staff were omitted, since they did not include student input of any kind. The user names of staff that had posted to the discussion board were obtained prior to data collection in order to facilitate this step. Posts that were identified for inclusion were copied and pasted into individual text files and saved under sequential file names in the order in which they were collected (i.e. post01, post02, post03...). Any comments or replies that accompanied a post were saved with that same thread and were considered part of the same unit of analysis. Since traditional means of obtaining consent were not practical for this part of the study, an alternative method was used to inform authors of posts about the study. The discussion board administrator posted a message (see Appendix D) presenting information about the study and requesting that anyone who wished to exclude their posts from the analysis contact the study's principal investigator. This message was kept visible on the discussion board until the completion of the study.

Data Analysis

The first two questions of the survey were mapped to preexisting categories as determined by NCSU administrative definitions For level of study, this process was fairly straightforward, as the question was closed-ended and could be easily translated for analysis. For the second question, the responses given for major or area of concentration were mapped to the list of degrees and majors for each of the twelve constituent colleges of the university. Each response was then coded with the name of the corresponding college for later analysis.

The method of open coding was used to analyze the remainder of the survey responses and the posts from the Learning Commons discussion board. Each response or post was analyzed for broad themes and these were then recorded along with accompanying demographic information in an Excel spreadsheet. As an example, a comment about the need for more computers in the Learning Commons might be classified under 'computing'. For the discussion board posts, this process was carried one step further, as each category was given a modifier according to the nature of the post. Comments expressing approval of services or facilities were given the modifier 'positive', those of a disapproving nature were coded 'negative', and any posts suggesting changes were labeled 'improvement'. For example, a post asking for a greater variety of computers would be coded 'computing – improvement'. In cases where a survey response or discussion board post was deemed to have multiple themes, each topic was recorded separately. After all items had been coded once, the themes were further reviewed for consistency and redundancy and some were consolidated in order to facilitate analysis. For each question, posts or comments that were still not relevant to any existing category after this step were placed in a separate group labeled 'other'.

RESULTS

Student Survey

A total of 149 surveys were collected from students during the two-week period of March 17, 2008 to March 30, 2008. Of the total number received, 52 were collected through the online version of the survey and 97 copies of the print survey were collected from inside the Learning Commons. The following sections describe the responses to individual questions in the survey.

Question 1: Level of Study

The first question asked students to identify their level of study at NCSU in terms of freshman, sophomore, junior, senior, graduate, or other. Table 1 and Figure 1 show the distribution of respondents by level of study. While juniors, seniors, and graduate students were evenly represented, sophomores accounted for somewhat fewer responses. Freshmen were the smallest group with eleven respondents, four individuals marked 'other' as their level of study, and one left no response for the question.

Table 1. All Respondents by Level of Study

Level of Study	#	%
Freshman	11	7.4%
Sophomore	24	16.1%
Junior	37	24.8%
Senior	37	24.8%
Graduate	35	23.5%
Other	4	2.7%
No response	1	0.7%
TOTAL	149	100.0%

Figure 1. All Respondents by Level of Study (*n*=149)

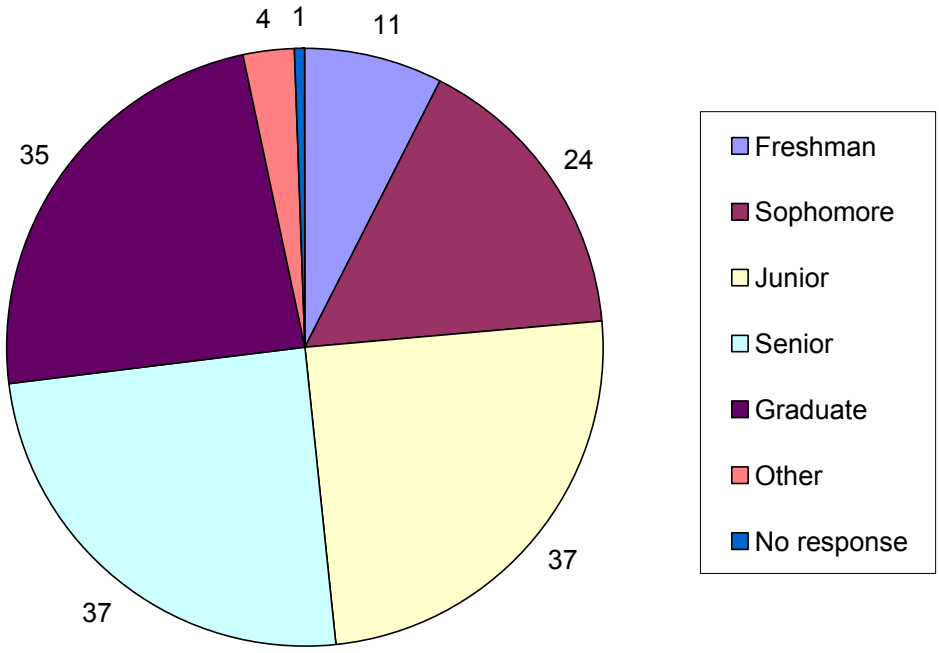
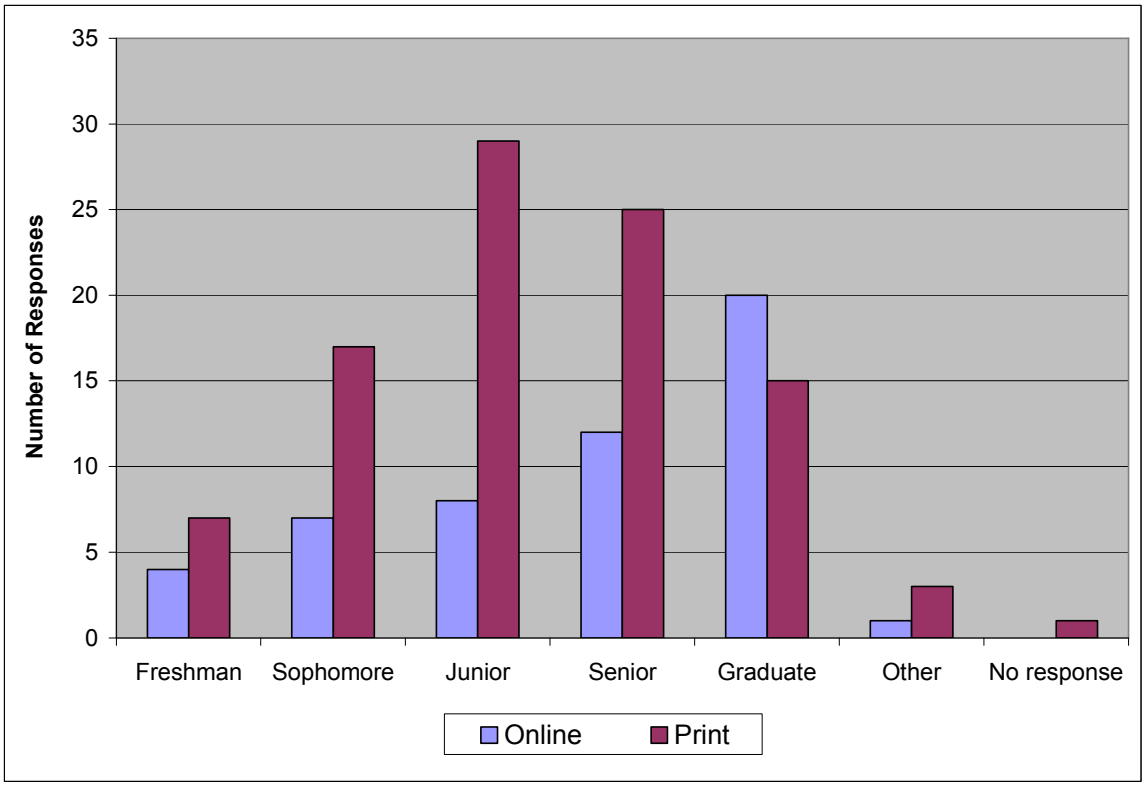


Table 2 and Figure 2 display a comparison of respondents to the online and print versions of the survey by level of study. For respondents to the online survey, graduate students were the largest group, followed by seniors, juniors, sophomores, and freshmen. One online respondent marked 'other' for this question, and there were no blank responses. More undergraduates responded to the print version, but graduate students were still well-represented. Juniors were the largest group for this version, followed by seniors, sophomores, graduate students, and freshmen. Three respondents for the print component marked 'other' as their level of study, and only one declined to provide a response.

Table 2. Respondents by Level of Study – Online vs. Print Survey

Level of study	Online	Print
Freshman	4	7
Sophomore	7	17
Junior	8	29
Senior	12	25
Graduate	20	15
Other	1	3
No response	0	1
TOTAL	52	97

Figure 2. Respondents by Level of Study – Online vs. Print Survey (*n*=149)



When judged against actual enrollment statistics for the university, the distribution of survey respondents by level of study was quite close in several aspects. Table 3 and Figure 3 show a proportional comparison of actual NCSU enrollment by level of study to that of survey respondents. The percentages of survey respondents

identified as graduate students, seniors, and sophomores were all remarkably close to the figures for actual enrollment. This is especially notable considering that no form of statistical sampling was used in selecting respondents for the survey. The proportion of juniors represented in the survey was less similar, and differed from actual numbers by about 5%. Freshmen were most significantly underrepresented in the survey population when compared to actual enrollment (7.6% vs. 14.4%).

Table 3. Level of Study – Survey Respondents vs. Actual

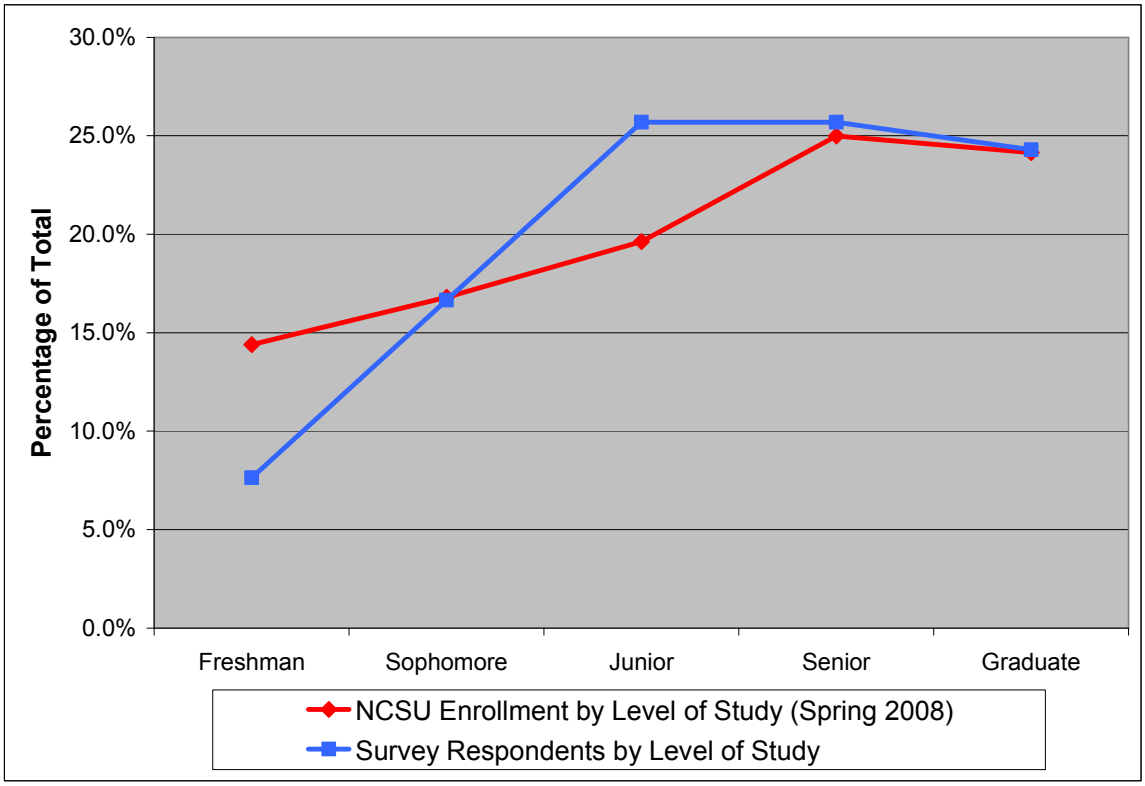
Survey Respondents		
Level of Study	#	%
Freshman	11	7.6%
Sophomore	24	16.7%
Junior	37	25.7%
Senior	37	25.7%
Graduate	35	24.3%
TOTAL*	144	100.0%

*Excludes 5 surveys with other/no response for level of study

NCSU Enrollment - Spring 2008*		
Level of Study	#	%
Freshman	3633	14.4%
Sophomore	4240	16.8%
Junior	4956	19.6%
Senior	6308	25.0%
Graduate	6097	24.2%
TOTAL	25234	100.0%

*Source: http://www2.acs.ncsu.edu/UPA/enrollmentdata/sp08enrol/index.htm

Figure 3. Level of Study – Survey Respondents vs. Actual (% of totals)



Question 2: Major / Area of Concentration

For the second question, students were asked to identify their major or area of concentration. During analysis, the responses for this question were mapped to a list of the university's twelve constituent colleges. Of the twelve, nine were represented in the responses received from students. While the Graduate School and First-Year College are considered distinct units inside the university, their students are affiliated with one of the other ten colleges for majors or concentrations. It is therefore understandable that there were no responses listing these colleges. The College of Veterinary Medicine also did not receive any responses, likely due to the fact that this unit is physically separated from the main campus and has its own library facilities.

Table 4 and Figure 4 present the distribution of survey respondents by college. Of the 149 total responses, approximately 60% were attributed to three colleges: Agriculture & Life Sciences, Engineering, and Humanities & Social Sciences. The latter represented the highest number of responses for the survey, with 43. The College of Design and College of Textiles were the least represented units, with three and one respondents, respectively. Three surveys did not have a response to this question.

Table 4. All Respondents by College

College	#	%
Humanities & Social Sciences	43	28.9%
Engineering	39	26.2%
Agriculture & Life sciences	27	18.1%
Management	12	8.1%
Physical & Mathematical Sciences	9	6.0%
Education	6	4.0%
Natural Resources	6	4.0%
Design	3	2.0%
Textiles	1	0.7%
Other	0	0.0%
No response	3	2.0%
TOTAL	149	100.0%

Figure 4. All Respondents by College (*n*=149)

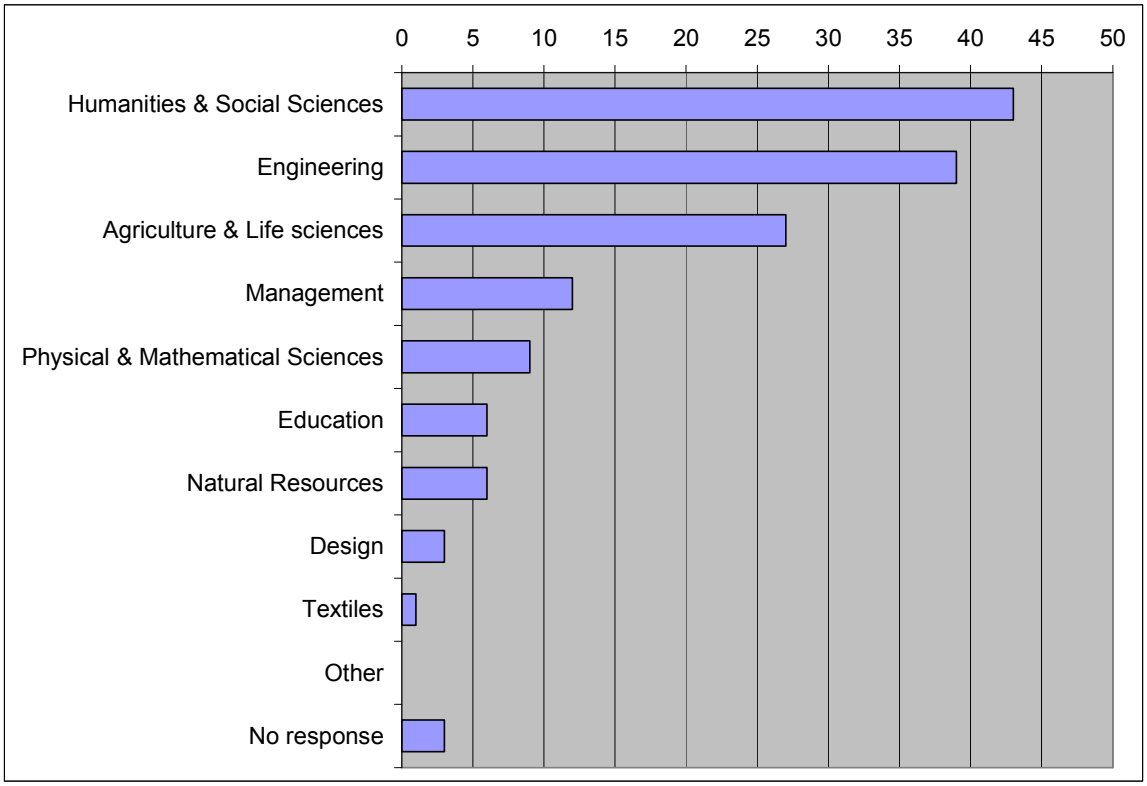


Table 5 and Figure 5 show a comparison of respondents by college for the online and print versions of the survey. The College of Humanities & Social Sciences comprised just less than half of all respondents to the online version. In fact, the top three colleges (Humanities & Social Sciences, Engineering, and Agriculture & Life Sciences) accounted for more than 80% of responses. The remaining colleges were represented by three or fewer respondents, and two online surveys did contain responses for this question.

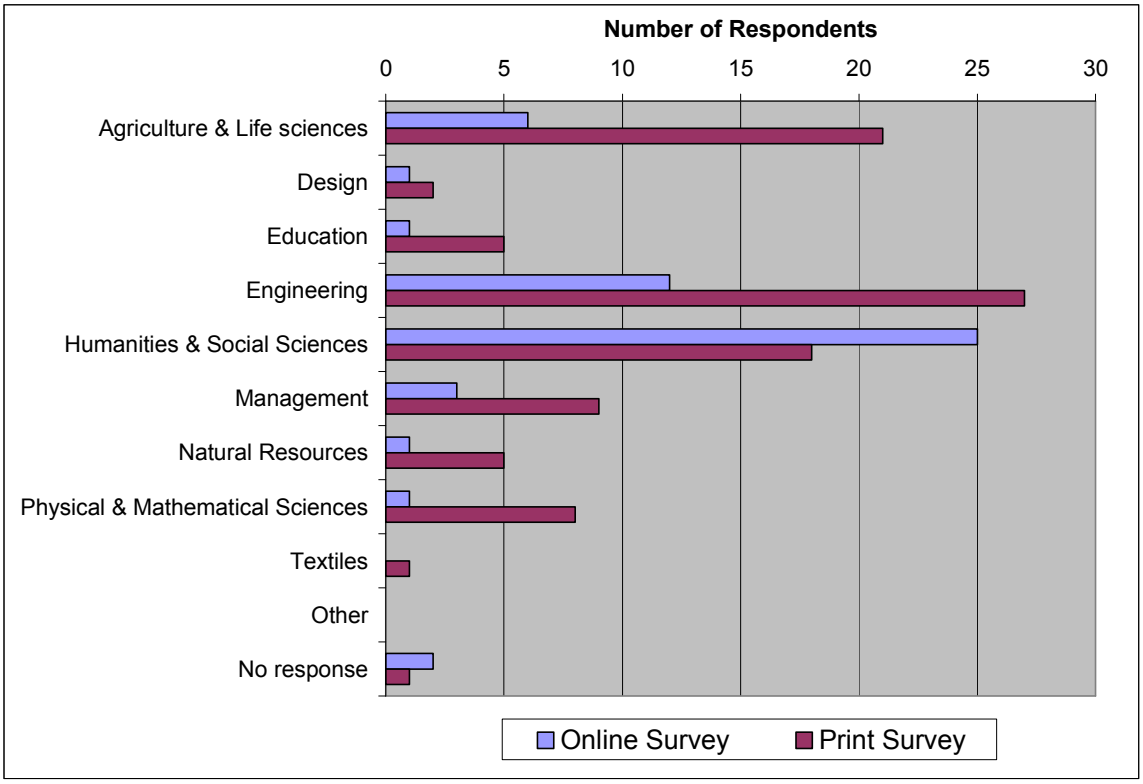
Similar to the online survey, the three top colleges for the print version were again Humanities & Social Sciences, Engineering, and Agriculture & Life Sciences. Engineering, however, received the most responses with 27, while Humanities & Social

Sciences was much less prominent (48.1% vs. 18.6% of total responses). These three colleges accounted for nearly 70% of respondents to the print survey. The remaining 30% of respondents were split among the other six colleges. One survey did not contain a response for this question.

Table 5. Respondents by College – Online vs. Print Survey

College	Online	Print
Agriculture & Life sciences	6	21
Design	1	2
Education	1	5
Engineering	12	27
Humanities & Social Sciences	25	18
Management	3	9
Natural Resources	1	5
Physical & Mathematical Sciences	1	8
Textiles	0	1
Other	0	0
No response	2	1
TOTAL	52	97

Figure 5. Respondents by College – Online vs. Print Survey (*n*=149)



As with the distribution of survey responses by level of study, the proportional representation of respondents according to college affiliation was surprisingly similar to actual enrollment statistics. Table 6 and Figure 6 display a comparison of survey respondents and university enrollment figures by college. With one exception, the proportional representation for the all colleges in the student survey was within three percentage points of that for the actual figures for enrollment. Only the College of Humanities & Social Sciences deviated significantly from this trend, accounting for 29.5% of the survey respondents compared to just 17.2% of actual enrollment. This overrepresentation may be related to the reliance of that particular college's curriculum on the use of library materials.

Table 6. College Enrollment – Survey Respondents vs. Actual

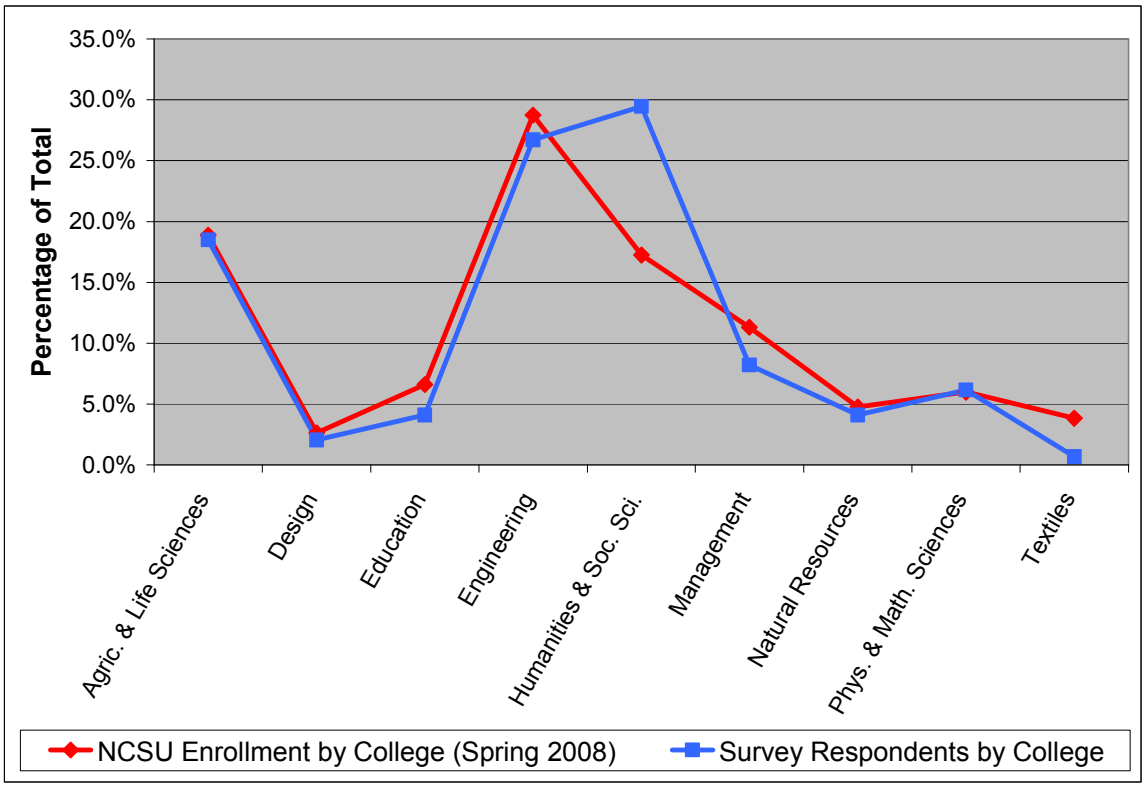
Survey Respondents by College		
College	#	%
Agric. & Life Sciences	27	18.5%
Design	3	2.1%
Education	6	4.1%
Engineering	39	26.7%
Humanities & Soc. Sci.	43	29.5%
Management	12	8.2%
Natural Resources	6	4.1%
Phys. & Math. Sciences	9	6.2%
Textiles	1	0.7%
TOTAL*	146	100.0%

*Excludes 3 surveys with no response for college

NCSU Enrollment by College - Spring 2008*		
College	#	%
Agric. & Life Sciences	4764	18.9%
Design	665	2.6%
Education	1666	6.6%
Engineering	7251	28.7%
Humanities & Soc. Sci.	4350	17.2%
Management	2854	11.3%
Natural Resources	1206	4.8%
Phys. & Math. Sciences	1510	6.0%
Textiles	968	3.8%
TOTAL	25234	100.0%

*Source: http://www2.acs.ncsu.edu/UPA/enrollmentdata/sp08enrol/index.htm

Figure 6. College Enrollment – Survey Respondents vs. Actual (% of totals)



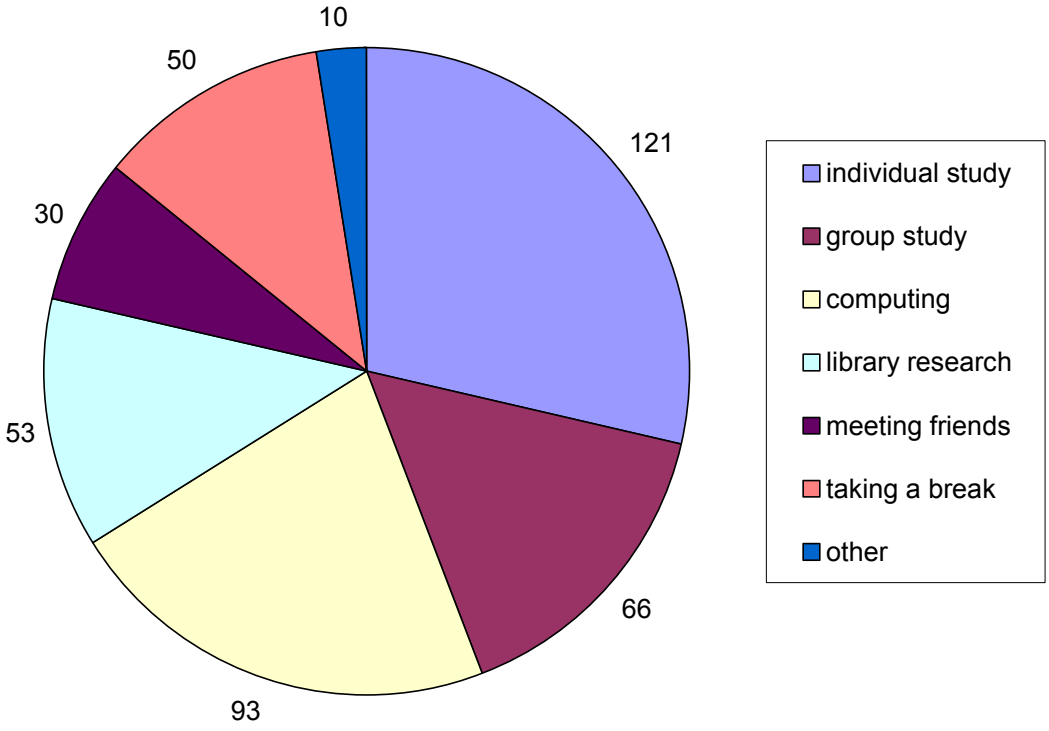
Question 3: For what purpose or activity do you use the Learning Commons most often?

The third question asked respondents to select their preferred activities or uses for the Learning Commons from a predefined list. Respondents were asked to check all items that were applicable, and a space was provided for additional uses or comments. Table 7 and Figure 7 show the total number of selections for each activity or use that was listed. The most popular activity among respondents was individual study (121 selections), followed by computing (93), group study (66), library research (53), taking a break (50), and meeting friends (30). Ten other uses were also recorded, of which some examples were video games, tutoring, and "wasting time".

Table 7. Q3 – All Respondents

Response	#	%
individual study	121	28.6%
group study	66	15.6%
computing	93	22.0%
library research	53	12.5%
meeting friends	30	7.1%
taking a break	50	11.8%
other	10	2.4%
TOTAL	423	100.0%

Figure 7. Q3 – All Respondents (*n*=423)



Question 4: What do you like most about the Learning Commons?

The fourth question was designed to identify the perceived strengths of the Learning Commons. This item was left open-ended and responses were coded during analysis into a set of themes or categories. In instances where a respondent wrote more than one comment for this item, each comment was coded separately. Table 8 and Figure 8 present the coded categories of student responses for this question. A total of 203 separate comments were recorded, as well as eleven surveys where no response was given for this question. The atmosphere or environment of the Learning Commons received the most positive feedback, with 62 responses. This category included specific comments related to the colors, lighting, and décor as well as those referring to the general atmosphere of the Learning Commons. The computing facilities, which were

taken to include both hardware and software, received the next highest mention, with 58 responses. Rounding out the top three was physical space, which accounted for another 35 responses. This category included comments related to the available seating, workstations, furniture, and the physical layout of the Learning Commons. The remaining categories listed as strengths included group study space (11 responses), library staff (11), the convenience or multiple uses of the facility (9), video games (7), white boards (5), and library materials (3). Two miscellaneous comments could not be placed into any of the existing categories and are listed under 'other'.

Table 8. Q4 – All Respondents

Grouped Responses	#	%
atmosphere/environment	62	29.0%
computing facilities	58	27.1%
physical space	35	16.4%
group study space	11	5.1%
library staff	11	5.1%
convenience/multiple uses	9	4.2%
video games	7	3.3%
white boards	5	2.3%
library materials	3	1.4%
other	2	0.9%
no response	11	5.1%
TOTAL	214	100.0%

Figure 8. Q4 – All Respondents (*n*=214)

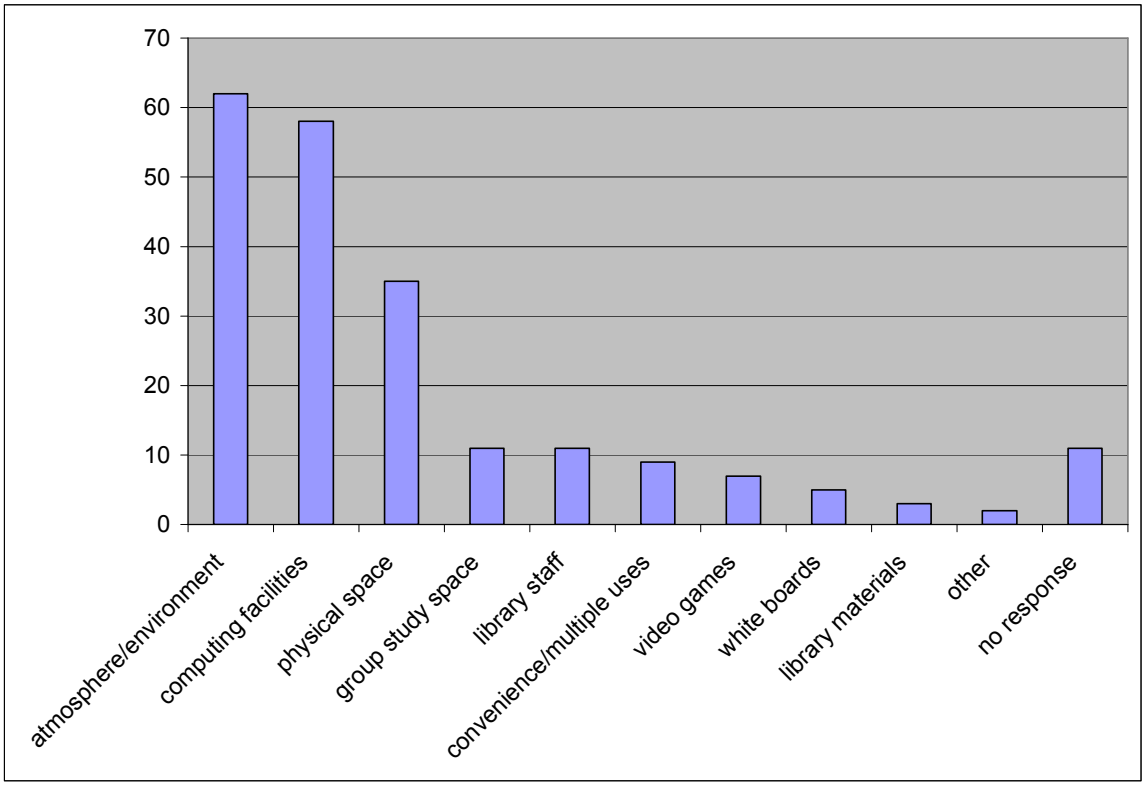


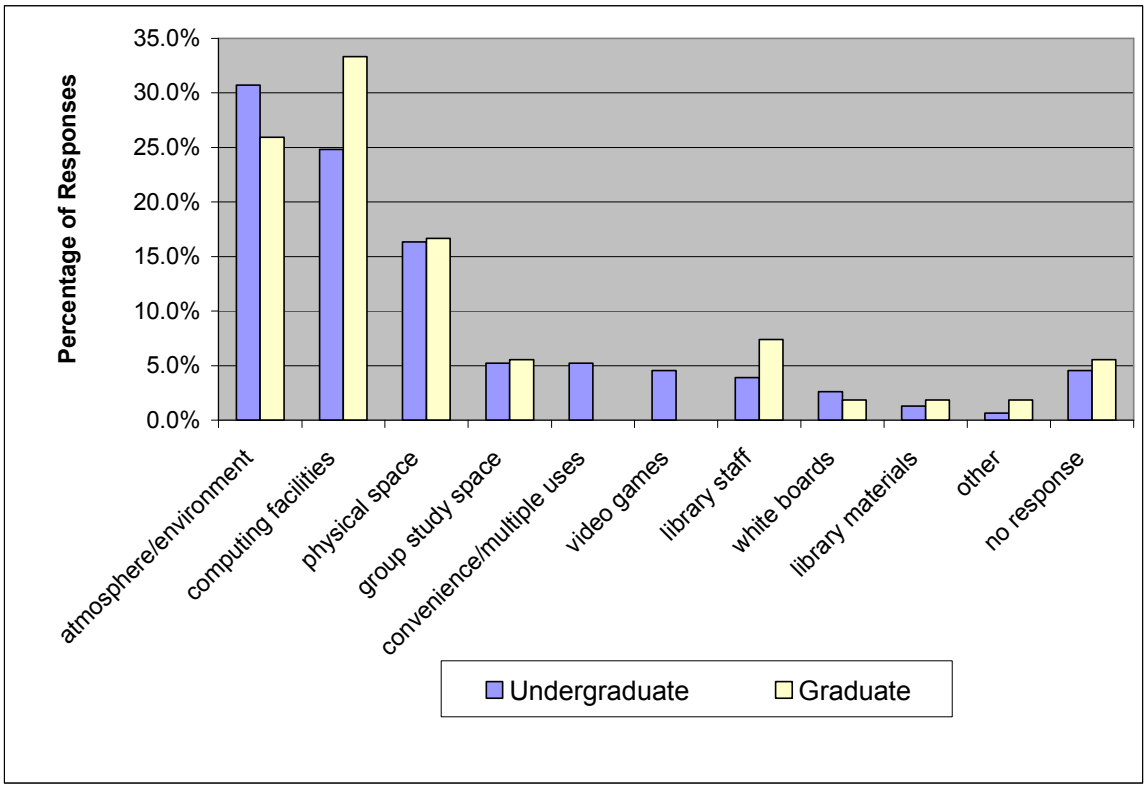
Table 9 and Figure 9 provide a comparison of undergraduate and graduate student respondents' comments for this question. Graduate students listed the computing facilities as a strength more often than the atmosphere or environment of the Learning Commons, whereas the opposite was true of undergraduates. Another key difference was that graduate students did not list either the video games or the convenience of the Learning Commons as strengths, even though these categories received fair mention from undergraduates.

Table 9. Q4 – Undergraduate vs. Graduate Student Responses

Grouped Responses	Undergraduate	Graduate	All
atmosphere/environment	47	14	61
computing facilities	38	18	56
physical space	25	9	34
group study space	8	3	11
convenience/multiple uses	8	0	8
video games	7	0	7
library staff	6	4	10
white boards	4	1	5
library materials	2	1	3
other	1	1	2
no response	7	3	10
TOTAL*	153	54	207

*Excludes 7 responses with no data for level of study.

Figure 9. Q4 – Undergraduate vs. Graduate Student Responses (*n*=207)



Question 5: What aspect(s) of the Learning Commons would you like to see improved and how?

For the fifth question, students were asked to provide at least one possible area of improvement for the Learning Commons. As with the previous question, responses were open-ended and each comment was coded separately into a list of themes and categories. Table 10 and Figure 10 present the coded categories of student responses for this question. A total of 170 comments were recorded, and 21 surveys did not provide a response to this question. Categories of responses varied greatly and included many comments related to specific services or items. The most frequently mentioned suggestions were to remove the video games from the Learning Commons (36 responses), reduce the noise level in the space (31), and to add more computers (28). After these three, responses were widely dispersed among a number of categories. Adding more group study rooms or group work space (10) was followed by more seating (9), better software and hardware options for computing (9), improving the options for printing (8), adding Linux computers (4), more video games (4), more white boards (4), adding food vending machines (3), more power outlets (3), restricting computer use to academic purposes (3), better furniture (2), and, finally, improving the quality of housekeeping (2). Fourteen miscellaneous comments could not be attributed to any of these categories and were therefore grouped under 'other'.

Table 10. Q5 – All Respondents

Grouped Responses	#	%
remove video games	36	18.8%
reduce noise level	31	16.2%
add computers	28	14.7%
more group study areas	10	5.2%
more seating	9	4.7%
better computing	9	4.7%
improve printing	8	4.2%
add computers (Linux)	4	2.1%
more video games	4	2.1%
more white boards	4	2.1%
add vending machines	3	1.6%
more power ports	3	1.6%
restrict computer use to academic purposes	3	1.6%
better furniture	2	1.0%
improve housekeeping	2	1.0%
other	14	7.3%
no response	21	11.0%
TOTAL	191	100.0%

Figure 10. Q5 – All Respondents (*n*=191)

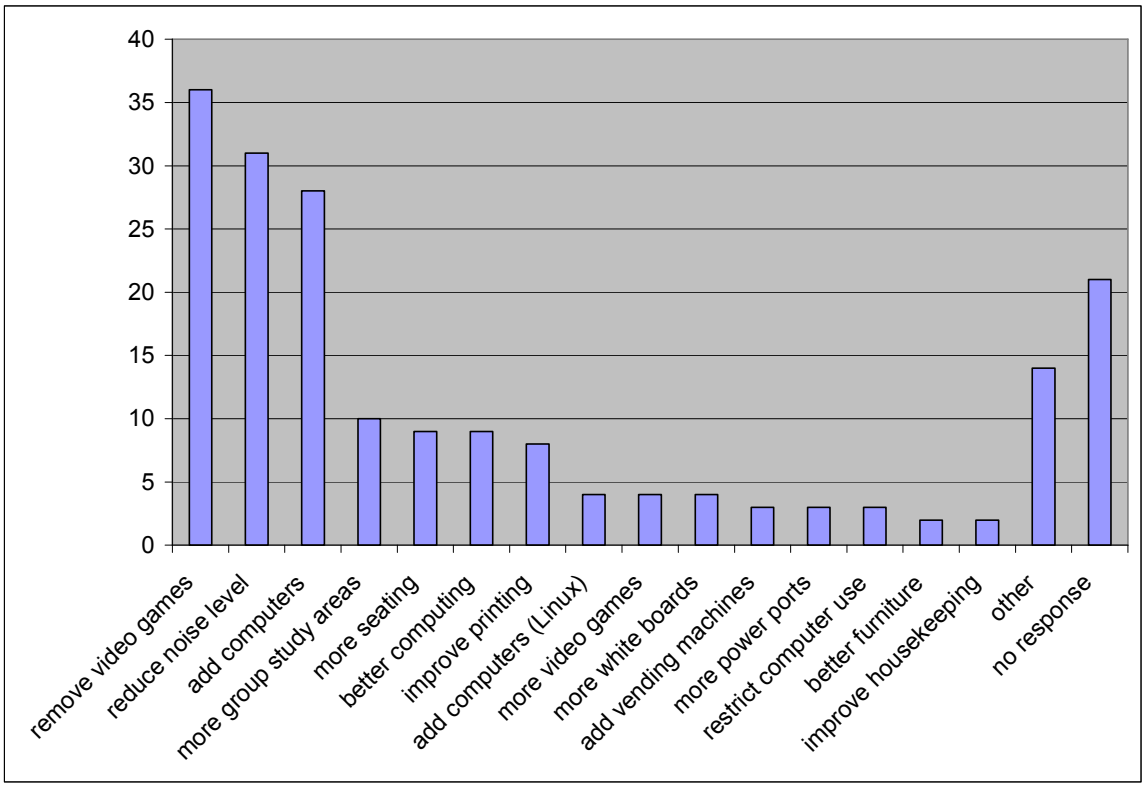


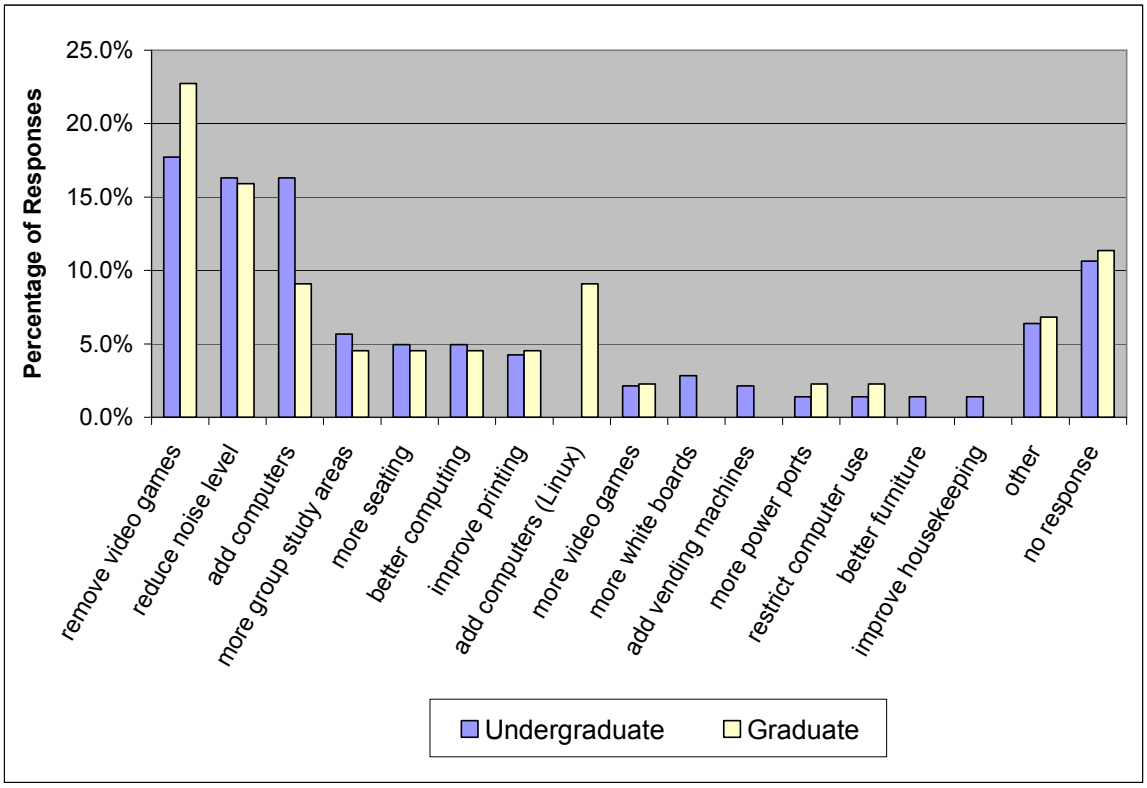
Table 11 and Figure 11 show a comparison of comments from undergraduate and graduate student respondents. While the overall trends for both groups remained similar, there were a few specific differences. First, all comments requesting more Linux computers came from graduate students, suggesting a specialized need that might be filled. Also, graduate students generally commented less on the physical aspects of the Learning Commons, such as the furniture or layout. Instead, graduate students appeared to be more concerned with computing facilities and the atmosphere for study.

Table 11. Q5 – Undergraduate vs. Graduate Student Responses

Grouped Responses	Undergraduate	Graduate	All
remove video games	25	10	35
reduce noise level	23	7	30
add computers	23	4	27
more group study areas	8	2	10
more seating	7	2	9
better computing	7	2	9
improve printing	6	2	8
add computers (Linux)	0	4	4
more video games	3	1	4
more white boards	4	0	4
add vending machines	3	0	3
more power ports	2	1	3
restrict computer use to academic purposes	2	1	3
better furniture	2	0	2
improve housekeeping	2	0	2
other	9	3	12
no response	15	5	20
TOTAL*	141	44	185

*Excludes 6 responses with no data for level of study.

Figure 11. Q5 – Undergraduate vs. Graduate Student Responses (*n*=185)



Question 6: What effect, if any, has the Learning Commons had on your use of the library?

The sixth and final question asked students to assess the impact of the Learning Commons on their use of the library in general. Again, the question was left open-ended and comments were coded separately into categories. Table 12 and Figure 12 present the coded categories of student responses to this question. A total of 150 comments were recorded for this question, and 24 surveys did not include a response. By far, the main result of implementation of the Learning Commons as perceived by students was increased use of the library (57 responses). This was consistent with other quantitative data that had been collected earlier as part of other library assessment activities. The second-highest number listed no change in their use (17), followed by those with a more

relaxed or enjoyable experience (13), individuals reporting that the Learning Commons (as opposed to other parts of the library) was now their primary destination for research or computing (12), respondents reporting improved study skills (6), and those stating decreased use of the library due to effects of the Learning Commons implementation (5). Eight miscellaneous responses could not be attributed to any of these categories and were therefore grouped under 'other'.

Table 12. Q6 – All Respondents

Grouped Responses	#	%
increased use	57	38.0%
no change	17	11.3%
more relaxed/enjoyable	13	8.7%
LC is primary library use	12	8.0%
moved to different part of library	8	5.3%
improved study skills	6	4.0%
decreased use	5	3.3%
other	8	5.3%
no response	24	16.0%
TOTAL	150	100.0%

Figure 12. Q6 – All Respondents (*n*=150)

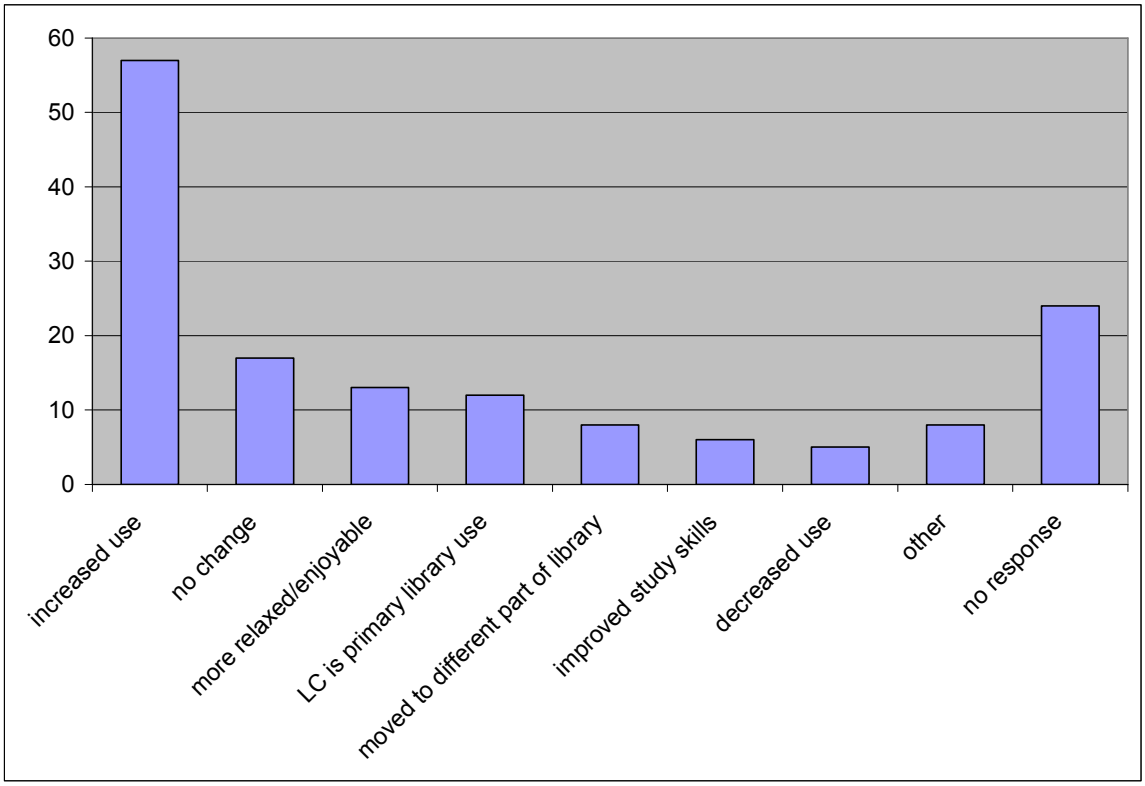


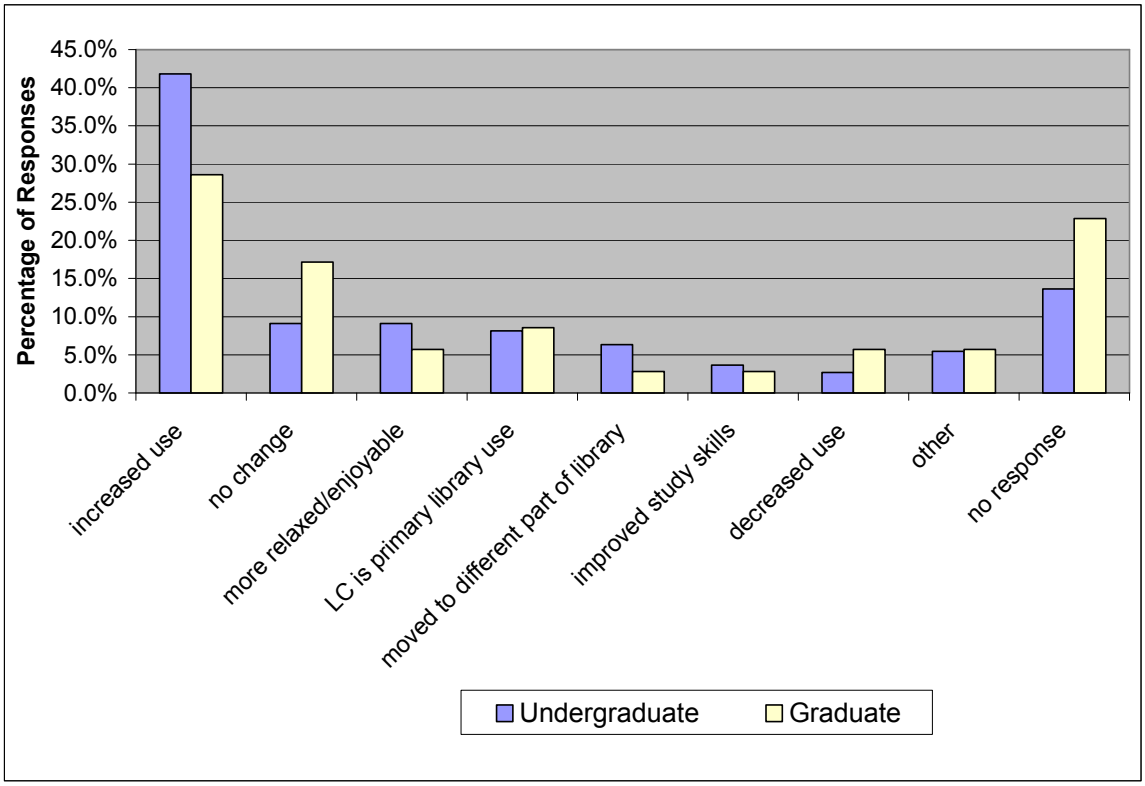
Table 13 and Figure 13 provide a comparison of comments from undergraduate and graduate student respondents for this question. Undergraduates were more likely than graduate students to report increased usage as a result of the Learning Commons implementation. Aside from this, however, overall trends in the comments for each group were similar.

Table 13. Q6 – Undergraduate vs. Graduate Student Responses

Grouped Responses	Undergraduate	Graduate	All
increased use	46	10	56
no change	10	6	16
more relaxed/enjoyable	10	2	12
LC is primary library use	9	3	12
moved to different part of library	7	1	8
improved study skills	4	1	5
decreased use	3	2	5
other	6	2	8
no response	15	8	23
TOTAL*	110	35	145

*Excludes 5 responses with no data for level of study.

Figure 13. Q6 – Undergraduate vs. Graduate Student Responses (*n*=145)



Discussion Board Posts

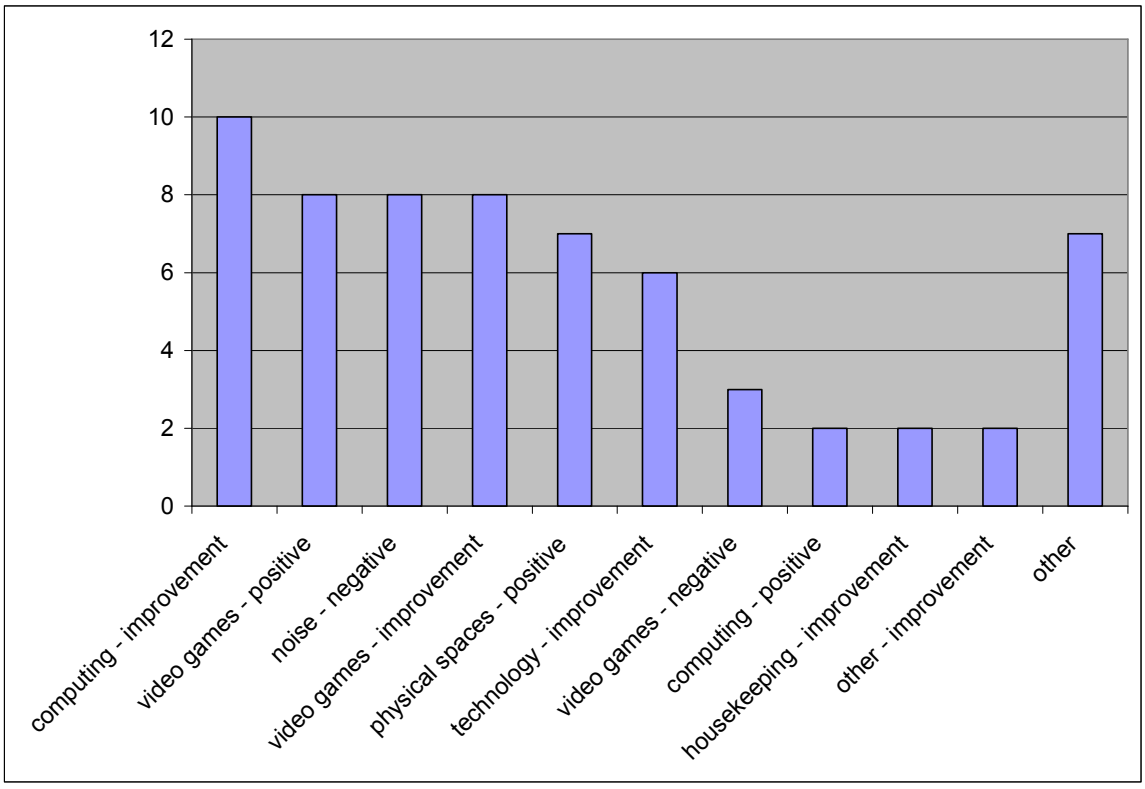
Comments posted to the Learning Commons online discussion board were also analyzed in order to supplement the responses from the survey. Each post and its subsequent threads were examined for themes and were then coded according to their content (i.e. 'computing'). A further descriptor was assigned to each post based on the nature of the comments. Comments expressing approval of services or facilities were given the modifier 'positive', those of a disapproving nature were coded 'negative', and any posts suggesting changes were labeled 'improvement'. As an example, a post asking for a greater variety of computers would be coded 'computing – improvement'.

Table 14 and Figure 14 display the results of this analysis. A total of 63 posts spanning the time period of March 12, 2007 to January 1, 2008 were collected. Posts created by library staff to publicize services or events were excluded from the analysis, thereby limiting the sample to those created by students only. Posts varied greatly in scope and were distributed fairly evenly across coded categories. Comments suggesting improvements in the type of computing hardware and software made up the largest category (10), followed by posts approving of the video games (8), negative comments on the noise level in the Learning Commons (8), suggestions for improving the use of video games (8), praise for the physical space and design (7), ideas for enhancing technology use (6), negative comments concerning the video games (3), praise for the computing facilities (2), ideas for improving housekeeping (2), and other suggestions for developing services (2). Another seven comments did not fit well into any of these categories and were grouped together under the label 'other'.

Table 14. Grouped Comments – LC Discussion Board Posts

Grouped Comments	#	%
computing - improvement	10	15.9%
video games - positive	8	12.7%
noise - negative	8	12.7%
video games - improvement	8	12.7%
physical spaces - positive	7	11.1%
technology - improvement	6	9.5%
video games - negative	3	4.8%
computing - positive	2	3.2%
housekeeping - improvement	2	3.2%
other - improvement	2	3.2%
other	7	11.1%
TOTAL	63	100.0%

Figure 14. Grouped Comments – LC Discussion Board Posts (*n*=63)



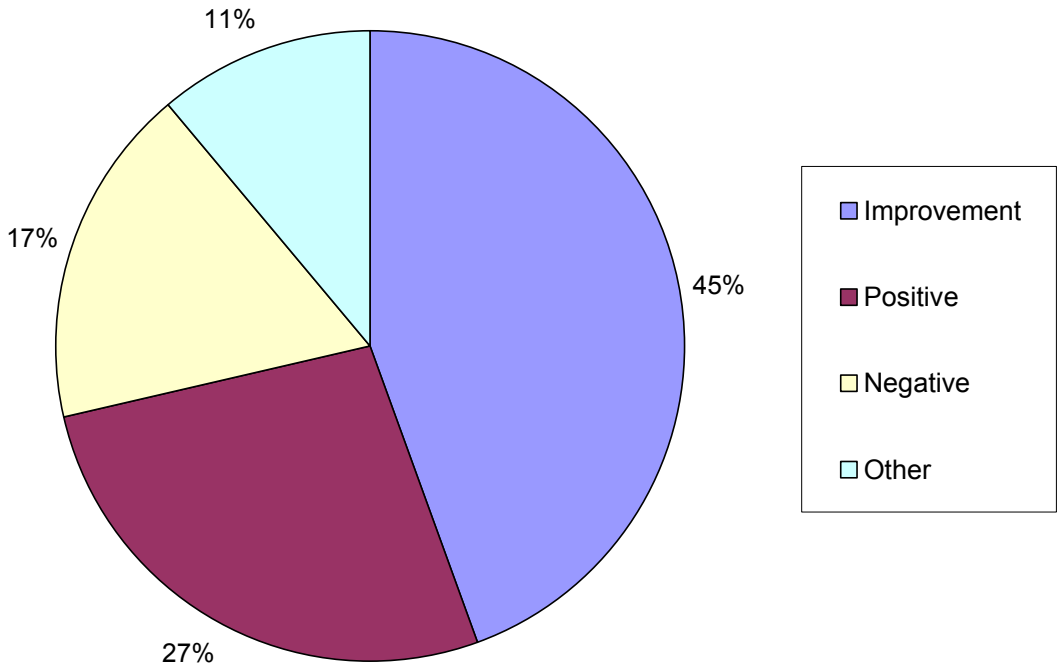
At least one trend was more apparent when posts were grouped according to the nature of their comments. Table 15 and Figure 15 show the distribution of comments

according to the broad categories of positive, negative, or improvement. Nearly half (44.4%) of all posts dealt with improvement of services in one way or another. Positive comments made up the second largest group with 27%, and negative posts accounted for 17.5% of the total number. The comments coded 'other' were not assigned subcategories and were therefore included separately in this analysis.

Table 15. Major Categories of Comments Posted to LC Discussion Board

Major Categories	#	%
Improvement	28	44.4%
Positive	17	27.0%
Negative	11	17.5%
Other	7	11.1%
TOTAL	63	100.0%

Figure 15. Major Categories of Comments Posted to LC Discussion Board



DISCUSSION

The results of the student survey suggest a number of trends relevant to assessment. First, the implementation of the Learning Commons appears to have succeeded in transforming the library into a center of student activity. The majority of student respondents noted that the Learning Commons either caused their use of the library to increase dramatically, made their time spent in the library feel more relaxed and enjoyable, or it became their primary study location (see Figure 12). Respondents attributed their use of the Learning Commons to a number of popular features. Among the strengths identified in the survey were the computing facilities available to students, the relaxed atmosphere, and the physical spaces available to work or study (see Figure 8). There are still, however, aspects of the Learning Commons that students feel need to be improved in order to maximize their ability to effectively use the space. The popularity of the LC has created problems of noise and distraction for students attempting to work or study individually, as well as increasing competition for computing resources and space. Respondents at all levels shared concerns over the former issue, especially as it related to the inclusion of video games in the LC (see Figure 10). As for the latter, students in general expressed a desire for more resources of every type. As the popularity of the LC continues to rise, the library will need to accommodate more and more students. While these themes were confirmed in the analysis of discussion board posts, this second part of the study did contribute some further insight into student use of the LC. One of the major uses of the discussion board was to post suggestions for improvements or future services (see Figure 15). This feedback mechanism proved to be

a useful means of communication between students and library staff, and may provide a solution to the need for constant revision in LC services and resources. Each of these trends was reinforced by the individual comments from students.

Perceived Strengths of the Learning Commons

When asked what they liked most about the LC, more than two thirds of comments from student respondents related either to the computing facilities, the atmosphere, or the physical spaces and amenities (see Figure 8). The fact that the atmosphere or environment of the LC was nearly tied with the computing facilities in terms of the number of comments suggests that the mixed use model of the Learning Commons is indeed highly desirable. Students seemed to approve of the combination of relaxed atmosphere, readily-accessible computing resources, and ample work space. Table 16 presents sample comments from respondents in these categories.

Table 16. Selected Comments – LC Strengths (Q4)

Category	Comment
Atmosphere/environment	"lighting, layout – it is very visually appealing"
	"the environment is casual and comfortable"
	"décor is very comfortable – not as serious and 'strict' as the rest of the library"
Computing facilities	"computer access"
	"availability of computers"
	"access to state-of-the-art technology"
Physical space	"relaxed, lots of room"
	"computers with large desk space; I like to be able to spread out while still having access to a computer"
	"individual working spaces w/computers w/lots of space"

Perceived Weaknesses of the Learning Commons

The popularity of the mixed-use LC model has given rise to several complaints among students, however. Both issues relate to the volume of activity in the LC and the competition among students for study space and computing resources. First, the larger number of students using the library and the LC has created a much busier, noisier environment. While student respondents listed the relaxed atmosphere of the LC as one of its chief strengths, they also showed a desire to have quieter spaces for study. When respondents were asked to name an area of improvement for the LC, the second-highest number of responses corresponded to the reduction of noise (see Figure 10). The only category with more responses related to a specific cause of noise and distractions, namely video games. The inclusion of gaming in the library was originally intended only for special events and for use in support of the computer engineering program. The library acquired, through monetary donations, several leading game consoles and used these to market the LC during its opening week. The continued demand and use of the video games by students led library staff to make the video games a permanent fixture in the LC. The results of the survey suggest that while students appreciate the availability of the video games for study breaks, they also feel that they should be moved to another part of the library to facilitate quieter study in the LC. Table 17 shows some sample comments from student respondents related to this issue.

Table 17. Selected Comments – Areas of Improvement (Q5)

Category	Comment
Remove video games	"the video game area is great but maybe it shouldn't be in the middle of everything, it can be kind of distracting"
	"maybe have a space for the video games where they cannot bother others who are studying"
	"move the video games farther from study/computing areas
Reduce noise level	"it needs to be a lot quieter in [the] new wing or create a space w/big tables + computers somewhere else"
	"I would like the noise due to cell phones to be reduced"
	"it stays very crowded and loud"
Add computers; more seating; more group study space	"more seating – more comfy chairs + couches"
	"it's ridiculous how hard it is to get on a computer in here"
	"Expand area to install more work areas! Hard to get access during weekdays!"
	"more computers – redo the West Wing too!"

The second grouping of suggested improvements related to the need for additional resources in the LC. The popularity of the space has created competition for computers, seating, and space in general. When students were asked to describe suggestions for improvement, they expressed a need for expanded services and facilities. Adding computers, more group study space, and further seating were the next three responses following those related to noise and video games (see Figure 10). The need to balance space between group work, individual study, and computing will only grow with the continued increase in usage of the LC and the library as a whole. A fair number of respondents stated that they would move to other parts of the library for quiet study, but still expressed an affinity for the relaxed atmosphere and comfortable spaces in the LC (see Figure 12). One possible solution would be to create more relaxed study spaces in other parts of the library away from the more populated areas where students could study quietly. In fact, students were already commenting that the renovation of the East Wing of the library (of which the LC is a part) should be repeated in other sections along the

same design principles (see Table 17). This may also be an answer to the more general problem of competition for resources inside the Learning Commons. Creating similar spaces elsewhere might reduce the demand on LC computers and seating and alleviate some of the issues of noise and crowding.

Undergraduate vs. Graduate Student Use

Overall, graduate students did not appear to have been impacted as much by the implementation of the Learning Commons as did undergraduates. The proportion of graduate students reporting no change in their use of the library following the opening of the LC was nearly twice that for undergraduates (see Figure 13). Moreover, the proportion of undergraduates reporting increased use was noticeably higher than that of graduate students. These findings suggest that the LC has been more successful in drawing in undergraduates, and that the space may need to be adjusted to accommodate more graduate student work.

Graduate students did not cease to use the library or shy away from visiting the Learning Commons altogether, however. Nearly the same proportion of graduate students as undergraduates reported that the LC is now their primary use of the library (see Figure 13). Rather, the major difference appeared in the preferred uses of the LC. While undergraduates expressed an affinity for the study atmosphere of the space, graduate students were more likely to use the LC for computing than for other types of academic work (see Figure 9). This is further evidence that creating similar informal spaces in other parts of the library may help to alleviate the problems associated with the high demand on LC resources. Having a quieter space for computing and individual

study would eliminate the need for graduate students to visit two different parts of the library for their research needs.

Methods of Assessment

The methods of evaluation used in this study will be of importance to other libraries with similar facilities. The survey was notably successful both in gathering interest from students and in creating a sample population that replicated the parameters of the larger student body as a whole (see Figures 3 & 6). Having both online and print versions of the survey appears to have worked well in including opinions from users of all backgrounds. The findings from the analysis of discussion board posts were of even greater note. The large proportion of comments that dealt with everyday improvements or suggestions from students suggest that this medium can be utilized effectively as an outlet for regular student feedback (see Figure 15). Since surveys, focus groups, and other types of assessment can take months to plan and administer, a feature such as this discussion board can allow for fast and easy communication between students and library staff. This type of communication is especially important for facilities such as the Learning Commons, where student input is envisioned as the basis for development of services and physical spaces.

LIMITATIONS AND FUTURE RESEARCH

This study was primarily exploratory in nature and therefore carries several limitations in terms of its applicability to the larger context of academic libraries in general. First, many characteristics of this study population and its object are unique to North Carolina State University. It follows that some specific findings may only apply to this institution and will not be of use to other libraries. Second, the sample population was not derived in any scientific or statistical manner. Although the resulting sample did reflect the larger student body in many ways, the study was not designed to be an exact replication of these parameters. In this way as well, the ability to generalize from these results is limited. Future studies may address these issues with purposeful or probability sampling among either within one library or across a number of institutions.

Another aspect of this study that deserves further examination is the effect of LC implementation on different types of library users. This study was able to include some non-users through the utilization of an online survey, but a more comprehensive exploration of this issue is warranted. Librarians need to understand both the positive and negative effects of these changes. Learning Commons have the ability not only to bring unprecedented numbers of students into the library, but also to create conflict with more traditional library users. A prospective study might examine students' use of the library before and after the implementation of an LC in an academic library. Any differences in their use over time could be examined to determine exactly what effects can be attributed to the LC implementation. Such a study might identify whether certain types of library users have been alienated by the creation of the new space.

Further research will also be needed to address the evolving goals of the Learning Commons model. While the Information Commons model is based more on the facilitated transmission of knowledge through the integration of library resources and technology, the Learning Commons model is centered on the idea of student creation of knowledge supported by the cooperation of librarians, faculty, and support staff. As this model is adopted in more and more libraries, new methods of evaluation are needed to assess the impact of these library spaces on student learning. Academic librarians will need to understand how different library environments can affect students' ability to learn and work within the context of their coursework. Once these links are established, college and university libraries will be able to better support the integration of library resources into the curriculum as a whole.

CONCLUSION

The Information Commons model of service is being adopted by an increasing number of academic libraries. As this model becomes more prevalent, the issue of assessment will be of increasing importance. This study of the NCSU Libraries Learning Commons provides one example of the evaluation process in an academic library. Both the online and print surveys provided valuable insight into student perceptions of the Learning Commons. Students were found to approve of the atmosphere of the LC, the computing facilities available, and the physical space provided for work or study. The popularity of these aspects, however, was perceived to have negative impacts on the noise level of the LC, especially as a result of the inclusion of video games. The high demand for LC resources was also deemed to have a negative effect on the availability of computers and seating. Despite this issues, the majority of students reported using the library more often as a result of the Learning Commons implementation. This increase was more prominent among undergraduates than graduate students, perhaps suggesting a need for adjustment of services or further marketing. The comments from the Learning Commons discussion board confirmed the findings of the survey and provided further insight into the opportunities for ongoing communication between students and library staff. Since this study was exploratory in nature, further research will need to be conducted in order to fully understand the effects of Learning Commons implementation on student use of the library.

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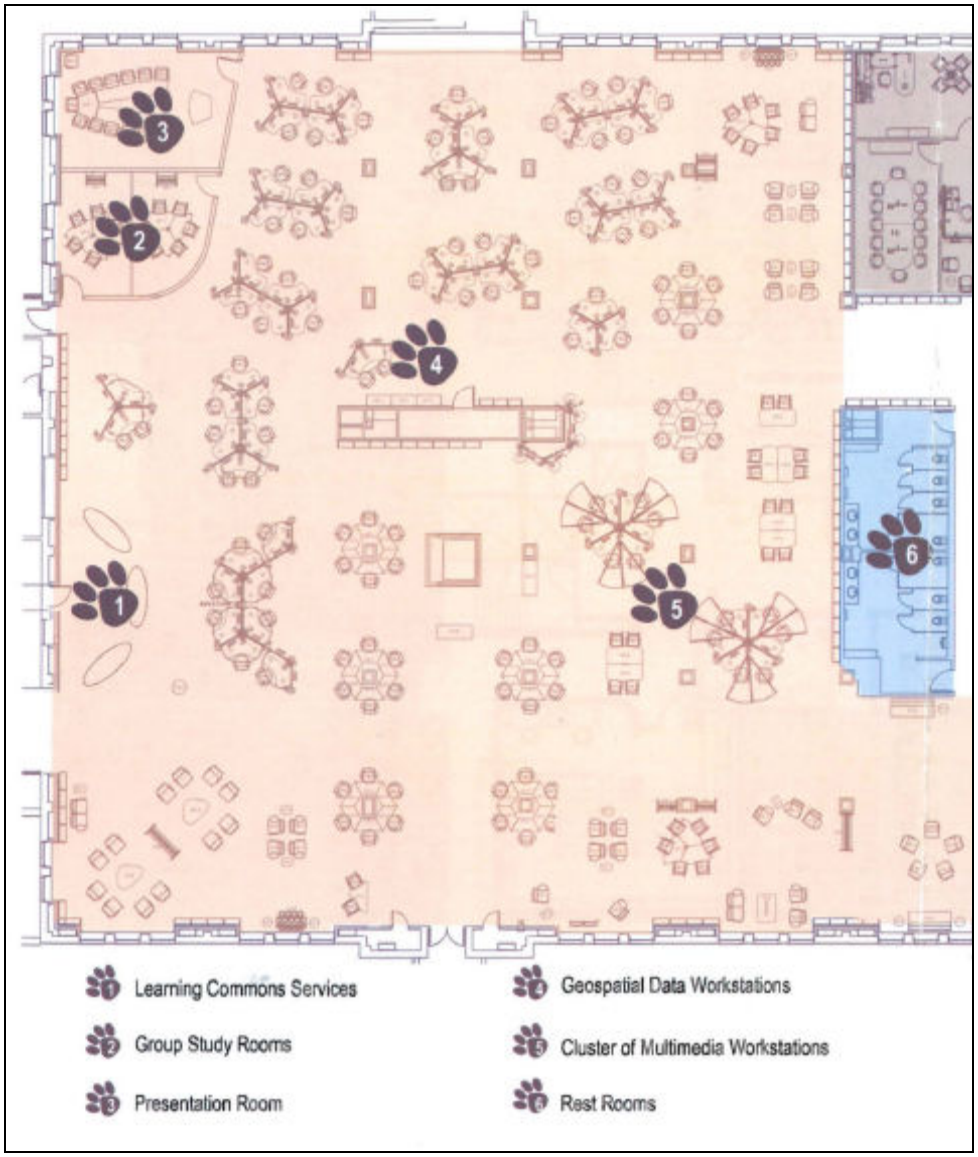
APPENDIX A: NCSU LIBRARIES LEARNING COMMONS FLOOR PLAN



APPENDIX B: STUDY FACT SHEET (PRINT VERSION)

Learning Commons Survey

This survey is part of a research study investigating student perceptions of the NCSU Libraries Learning Commons. Please read the fact sheet below to understand the details and requirements of this study before completing the survey. ***By completing the attached survey, you are consenting to be a participant in this research study.***

Study Fact Sheet

University of North Carolina-Chapel Hill
Information About a Research Study

IRB Study # 08-0361 **Consent Form Version Date:** 03-04-08

Title of Study: The Information Commons Concept in Libraries:
A Need for Qualitative Assessment

Principal Investigator: Stephen Sherman
UNC-Chapel Hill Department: School of Library & Information Science
Faculty Advisor: Jeffrey Pomerantz

Study Contact email: lcsurvey2008@gmail.com

What are some general things you should know about research studies?
You are being asked to take part in a research study. To join the study is voluntary. You may refuse to join, or you may withdraw your consent to be in the study, for any reason, without penalty.

Research studies are designed to obtain new knowledge. This new information may help people in the future. You may not receive any direct benefit from being in the research study. There also may be risks to being in research studies.

Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form. You should ask the researchers named above, or staff members who may assist them, any questions you have about this study at any time.

What is the purpose of this study?
We are attempting to gain an understanding of how students perceive the NCSU Libraries Learning Commons. This study is designed to identify the present strengths and weaknesses of the Learning Commons, as well as areas in which service to students could be improved.

This study will also be used to identify and evaluate methods of assessment for libraries and library facilities similar to those in place at NCSU. As the physical spaces and services of libraries change, new models for assessment become necessary.

Who will take part in this study?
Undergraduate and graduate students currently enrolled at North Carolina State University are being surveyed as part of this study.

How long will your part in this study last?
We estimate that this survey will take 10-15 minutes to complete. You may choose to end the survey at any time.

What will happen if you take part in the study
You will be asked to respond to questions regarding your opinions of the NCSU Libraries Learning Commons. You do not have to answer any questions that you do not wish to answer, for any reason.

What are the possible benefits from being in this study?
Research is designed to benefit society by gaining new knowledge. Your participation is important to help us understand how services in the Learning Commons can be improved, but you may not benefit personally from being in this research study.

What are the possible risks or discomforts involved from being in this study?
We do not think you will experience any discomfort or risk from completing the survey.

How will your privacy be protected?
You will not be asked to provide any personally identifying information as part of the survey.

Will you receive anything for being in this study?
You will not be compensated for your participation in this survey, but your opinion is very important to us.

Will it cost you anything to be in this study?
Aside from the time required to participate, there are no costs for being in the study.

What if you have questions about this study?
You have the right to ask, and have answered, any questions you may have about this research. If you have questions, or concerns, you should contact me via e-mail at lcsurvey2008@gmail.com.

What if you have questions about your rights as a research participant?
All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject you may contact, anonymously if you wish, the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

Thank you for helping me with this study.

APPENDIX C: STUDY FACT SHEET (ONLINE VERSION)

UNC-Chapel Hill IRB Study #08-0361
Study Title: The Information Commons Concept in Libraries: A Need for Qualitative Assessment
Principal Investigator: Stephen Sherman, School of Library & Information Science
Study Contact email: lcsurvey2008@gmail.com

Welcome!

The purpose of this survey is to assess student perceptions of the NCSU Libraries Learning Commons. This survey is open to current North Carolina State University undergraduate and graduate students. We are attempting to understand the strengths and weaknesses of the Learning Commons, as well as areas in which the facility could be improved. This study will also be used to identify and evaluate methods of assessment for libraries and library facilities similar to those in place at NCSU.

We expect this survey will take you 10-15 minutes to complete. You will be asked to provide some demographic information and responses to three open-ended questions. You will not be asked to give your name or any other personally identifying information as part of this survey.

Participation in this study is voluntary. Your responses are not required and you may exit the survey at any time by using the link in the upper-right-hand corner.

Your responses will be used to guide future development of the Learning Commons and its related services. We appreciate your participation in this survey and value your feedback. If you have any questions about this survey or if you would like to receive a copy of the study fact sheet, please e-mail us at lcsurvey2008@gmail.com.

Thank you!

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject you may contact, anonymously if you wish, the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

By completing the following survey, I consent to be a participant in this research study.

APPENDIX D: DISCUSSION BOARD CONSENT POST

As part of a graduate student research study, posts (including corresponding threads) in this discussion forum created from March 12, 2007 to January 1, 2008 will be analyzed for comments related to student satisfaction with the Learning Commons. The purpose of this study is to understand student perceptions of the strengths and weaknesses of the Learning Commons. This study may also be used to identify and evaluate methods of assessment for libraries and library facilities similar to those in place at NCSU.

In order to protect the privacy of individuals who created posts during this time period, no identifying information (e.g. user names) will be collected for this analysis. Furthermore, the investigators will refrain from directly quoting posts in their analysis, and will instead focus on general themes and trends in the comments.

If you would like more information about this study or wish to exclude your comments from this analysis, please contact us at lcsurvey2008@gmail.com. You may also contact the discussion board administrator, Joe Williams, at joewilliams@ncsu.edu.

UNC-Chapel Hill IRB Study #08-0361
Study Title: The Information Commons Concept in Libraries: A Need for Qualitative Assessment
Principal Investigator: Stephen Sherman, School of Library & Information Science

APPENDIX E: SURVEY QUESTIONNAIRE

1. Please indicate your level of study at NCSU: (*please check <u>one</u>*)

   Undergraduate:
   - O Freshman
   - O Sophomore
   - O Junior
   - O Senior

   O Graduate
   O Other

2. Major / Area of concentration: _____

3. For what purposes or activities do you use the Learning Commons most often?

   Please choose all that apply:

   - O individual study
   - O group study
   - O computing
   - O library research
   - O meeting friends
   - O taking a break
   - O other _____

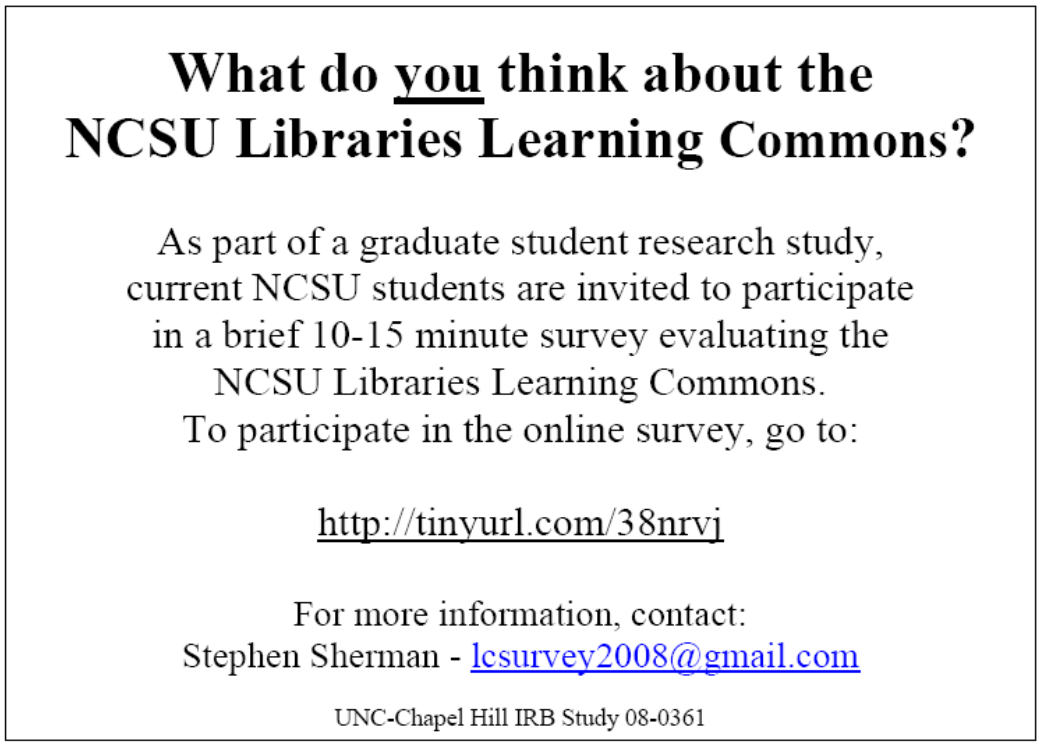
4. What do you like most about the Learning Commons?

5. What aspect(s) of the Learning Commons would you like to see improved and how?

6. What effect, if any, has the Learning Commons had on your use of the library?

Please drop your completed survey in any of the large labeled bowls in the Learning Commons. Thank you!

APPENDIX F: STUDY ADVERTISEMENT



What do you think about the NCSU Libraries Learning Commons?

As part of a graduate student research study, current NCSU students are invited to participate in a brief 10-15 minute survey evaluating the NCSU Libraries Learning Commons.
To participate in the online survey, go to:

http://tinyurl.com/38nrvj

For more information, contact:
Stephen Sherman - lcsurvey2008@gmail.com

UNC-Chapel Hill IRB Study 08-0361